The Agribusiness of Batu Apples with Environment Concept

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ABSTRACT

The purpose of this study is to analyze the influence of apple agribusiness with environment concept toward competitiveness. The research was conducted in Batu city East Java Indonesia. Batu city is famous as the apples city. Respondents of this study were 129 apple farmers determined using Simple Random Sampling. The data retrieved through interviews using a questionnaire. The data analysis was performed with the Generalized Structured Component Analysis (GeSCA). The GeSCA analysis is one of analysis the Structural Equation Modeling (SEM) based component (component - based SEM). The results showed that the agribusiness of Batu apple with environment concept has a positive influenced toward the competitiveness. The competitiveness of apple agribusiness also gave a positive influenced toward the business performance. But stoward the business performance. From this study, they farmer are suggested to do the production using natural fertilizers and pesticides, so it can meet the requirement of high competitive globalization in apple agribusiness.

Keywords: Agribusiness, environment, Competitiveness, Business performance

INTRODUCTION

The globalization will be more and more intense in the future, which the world trade will be more and more opened. The liberalization of trade will open up the export opportunities as much as possible but also as a threat to the products in the country because the imported products will be more and more increase. The worst impact threatens the very bottom layer of society, such as small farmers and small traders. Human resources and infrastructure must be prepared to face globalization. Natural resources must be managed properly. Indonesia is an Agriculture State, which is the agricultural sector plays an important role. Indonesia has many local commodities that are managed through agribusiness. Agribusiness are the activities related to the handling of agricultural commodities in the broad sense , which includes one or all of the production chain that includes input, output and production sector of farming, marketing of agricultural input - output farming and institutional support (Downey and Erickson , 1987).

The global market that changed fundamentally and fast is a challenge and an opportunity for agribusiness development in Indonesia. The supply chain management must be able to make substantial and fast changing so that the products can be accepted by the world market. The agribusiness products of Indonesian that do not keep up with changes in line with globalization will not be able to compete with the similar products of other countries in an competition global that increasingly tough. The exports decline and the imports increasing of Indonesian agribusiness products in the global market is a strong indication of its weak

ISSN: 2223-9944, e ISSN: 2223-9553

competitiveness. Therefore, to face global competition then the Indonesian agribusiness products in particular of a local commodity should have competitiveness more strong and sustainable. Currently there have been the value changes that affect the consumer behavior in purchasing agribusiness products. First, the consumer awareness is increasing the consumer demand on nutritional healthy and safe products. Second, the lifestyle changes are increasing demands on product diversity and satisfaction. Third, the increasing awareness of the international society on the relationship between environmental sustainability and human welfare supported the inclusion of environmental sustainability aspects in economic decisions making. Consumers tend to choose products those with are healthy and safe (Chan and Lau, 2001). Many consumers tend to choose products of the better quality imports (Riccardo Vecchio, 2010).

The agribusiness apple is an agribusiness of the preeminent local commodity from Batu city. But currently the apple productivity has declined from 27.2 kg/tree in 2008 to 15 kg/tree in 2013. The decline of apple productivity is caused by decreasing of soil nutrition and organic matter, the increase of chemical residues in soil. It also caused by the damage of ecosystems, the temperature increase and the decrease of fertilizer inputs (Sitompul, 2007). To overcome these problems the production process must be carried out with care for the environment. The approach with Supply Chain Management (SCM) that has an insight environment concept can be used as a strategy in the developing countries to meet the demands of the green products consumer (Janaina and Nathalie, 2007). Therefore this study is important because it is raised issues about how is the impact of apple agribusiness with insight environmental concept toward the product competitiveness in global market. The purpose of this study is to analyze the influence of an apple agribusiness with insight environmental concept toward the product competitiveness. The following part of this paper will describe literature review that is relevant research, research methodology, results and discussion, conclusions and suggestions.

LITERATURE REVIEW

The apple agribusiness with Environment Concept is part of sustainable farming practices. The sustainable agriculture has become the basis for the protocol compilation of the implementation rules (rules of conduct) or standard of the operating procedures "Good Agricultural Practices" (GAP). The sustainable agriculture practices as a global movement become a mission of the international community, countries, development agencies, non-governmental organizations and international consumer organizations. They also encourage and oversee the implementation of the sustainable agriculture principles.

The Apple Agribusiness with Environment Concept

The apple agribusiness with insight environment concept that always pay attention to the environment and care about healthy and safe concept from the provision of facility production to the distribution process. It is in line with the increasing of consumer demand on healthy and safe product. A healthy apple can be produced if agriculture practice always cares about the environmental sustainability to support the sustainable agribusiness. The farmer should understand about the principles of agro-ecosystems and plant pest control, in order to make them easy to plan the implementation steps of the good apples farming

ISSN: 2223-9944, e ISSN: 2223-9553

systems. The process production phases have a critical role to ensure that the products produced by the farmers really environmentally friendly. It must prevent the pollution, minimize the using of chemical materials, and increase the recycled materials and reducing dangerous materials for the environment.

Things that should do continuously in a healthy apple production process are: a). the increasing of soil fertility using organic fertilizer; the using of proper organic fertilizer will provide proper nutrition for plants, b). Improving Crop quality; this activity is intended to replace the omit pesticides, c). Improving of apple field quality; apple plants require continuous water availability, but not resistant to the absence water saturated of natural enemies, d). Utilizing and conservative of natural enemies; factor that cause the farm to be costly is one important factor caused the high cost of apple farming. Natural enemies are generally more sensitive to pesticides, and therefore the application of pesticides (insecticides) should use a narrow-spectrum. The activities mentioned above aimed to create a healthy soil condition, which will support the healthy plant growth and good ecosystem.

The cultivation of healthy apple plants is still being done as usual. In apple cultivation with Environment Concept, the rational and goals of the cultivation activities are as follow: a. weeding; it is done to reduce moisture, as a source of organic matter, and left to a live natural enemies (refugee), b. watering; it is done to keep the water in a state like plants available, c. the picking leaves; it is done manually (by hand) with caution and results picking leaves used as a source of organic material. Prune after picking leaves in order to arrange branching engendered and to reduce moisture, and dispose of the source of inoculums (disease) as well as increase the efficiency of utilization of energy resources (nutrients and sunlight). d.The bending a branch; it is made to synchronize the growth of lateral shoots are relatively uniform flowering, e. fruit thinning; it should be done to improve fruit quality (size, appearance), f. wrapping; it is done using wax paper in order to get the color of the fruit skin remains smooth and avoid the attack of birds or bats, g. harvesting; it should be done when physiologically ripe fruit. If the harvest is done when the fruit is not ready will adversely affect plant growth and flowering the following season. Physiologically ripe fruit characteristics are: the maximum size of the fruit looks, aroma began to be felt, and the color looks bright fresh fruit and when pressed feels sharp. h. Post-harvest after the apples are picked collected, given the packaging. The apple farming application insight environmental concept cannot be done all at once in a short time. The process must be impartial in stages between soil, plants, development of agro-ecosystems, and the environment. If the apple farm insight environmental concept applied directly (directly without using an organic material) will be prone to failure, since agro-ecosystems is not ready.

The Product Competitiveness

Competitiveness is the ability of a commodity to enter the global markets and the ability to be able to survive in the local market. The product with competitiveness will have a high demand (Tambunan, 2001). The advantages of competitiveness are classified into two types: a) natural advantage/absolute advantage; natural advantage or absolute advantage possessed by a nation to one of the commodity does not directly cause these commodities will dominate the world market, this is because the number of producers is not just one country, but some countries are produced commodities with the same conditions of natural advantages. b.

ISSN: 2223-9944, e ISSN: 2223-9553

Acquired advantage; it is an advantage of a commodity that can be developed, so this advantage must be created.

Business Performance

Generally, business performance or economic performance can be measured by accounting - base measured and market based measured (Al - Tuwajiri, *et al.* 2004). In this study, the indicators of business performance used the product sales and the revenue. The environmental management includes a variety of initiatives to reduce or minimize the adverse of environmental impacts of the production process. This effort aims to improve environmental performance, reduce costs, enhance corporate image, reduce the risk of non-compliance and increase marketing advantages. The company's financial performance is affected by the environmental performances. When wastes (both hazardous and non-hazardous) are minimized as part of environmental management, it will results a better utilization of natural resources, increase efficiency and productivity and reduces the operating costs. When the company's environmental performance improves, it will result a tremendous marketing advantage. This will increase the revenue and create a new chance. Organizations that minimize the negative environmental impact of products and processes recycle post-consumer waste and establish an environmental management system, are ready to expand their markets global. They also will increase the environmental performance in their area.

METHODOLOGY

This study used descriptive quantitative methodology. The experiment was conducted in Batu city East Java Indonesia, because Batu city is a city that has apple as a preeminent commodity and it has an image as the city of apple in Indonesia. Samples were apple farmer through Random Sampling. Sample size was determined by statistical formulas as proposed Parel, *et al.* (1973). The quantity of samples was 129 apple farmer of 675 person population. The data were used the primary data and the secondary data. The primary data were obtained through observation and interviews at apple farmer. The data were analyzed by Generalized Structured Component Analysis (GeSCA), it is one of Structural Equation Modeling (SEM) based on component (component - based SEM). Tenenhaus (2008) said that GeSCA can be used for the calculation of scores and also it can be applied to small samples. The GeSCA can be used on structural models that involve variables with reflective and formative indicators. Hwang (2009) states that the GeSCA can found multikolonieritas, it is occurred a strong correlation between the exogenous variables. As a complex models in analyzing the relationship between variables, then the GeSCA model were measured by the following steps: a. design a structural model, b. design the measurement model, c. construct the path diagram, d. conversion path diagram to the system of equations, e. estimate, f. evaluate the goodness of fit .

Based on the description above, it can be presented the construction path in diagram as follow:

The construction below can be converted into following equation:

1. Specification of the relationship between latent variables with their indicators:

ISSN: 2223-9944, e ISSN: 2223-9553

The exogenous latent variables apple agribusiness with Environment Concept/Y_1 (formative)

Apple agribusiness with Environment Concept(Y_1) = $\lambda y_{1.1}$ Fertilizer ($Y_{1.1}$) + $\lambda y_{1.2}$ Pesticides ($Y_{1.2}$) + $\lambda y_{1.3}$ Fund ($Y_{1.3}$) + $\lambda y_{1.4}$ Knowledge ($Y_{1.4}$) + $\lambda y_{1.5}$ Resources ($Y_{1.5}$) + $\lambda y_{1.6}$ harvest and post-harvest ($Y_{1.6}$) +ζ_1

The endogenous latent variables Competitiveness/ Y_2 (reflective)

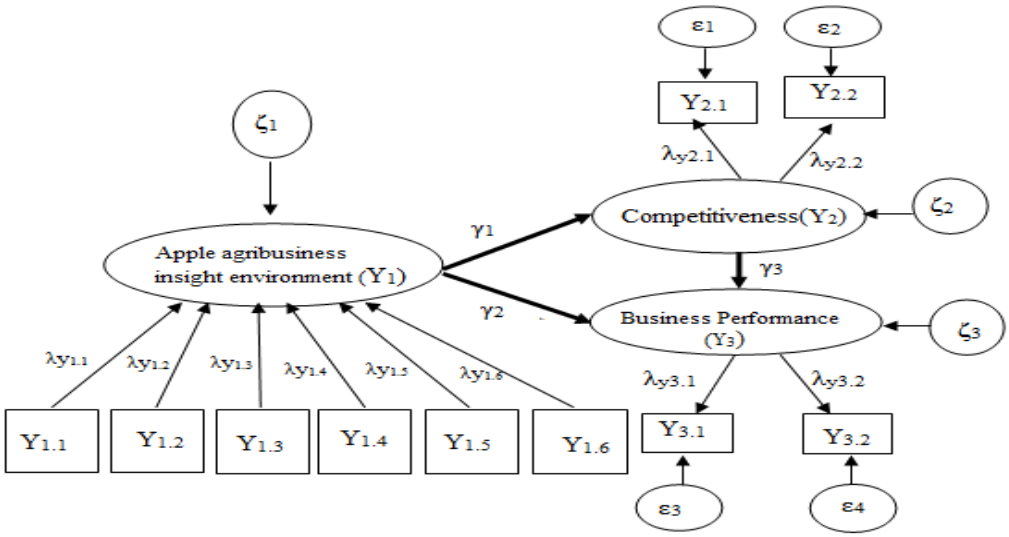
Product Quality ($Y_{2.1}$) = $\lambda_{y2.1}$ $Y_2 + \varepsilon_1$

Continuity ($Y_{2.2}$) = $\lambda_{y2.2}$ $Y_2 + \varepsilon_2$

The endogenous latent variables Business Performance/ Y_3 (reflective)

Income ($Y_{3.1}$) = $\lambda_{y3.1}$ $Y_3 + \varepsilon_3$

Sales ($Y_{3.2}$) = $\lambda_{y3.2}$ $Y_3 + \varepsilon_4$



Picture1. Construction of path diagram an apple agribusiness with Environment Concept

2. Specification of the relationship between latent variables (structural model):

Structure model of the apple agribusiness with Environment Concept in Batu city is described as follow:

Competitiveness/Y_2 = γ_1 apples Agribusiness with Environment Concept (Y_1) + ζ_2

Business Performance /Y_3 = γ_2 apples Agribusiness with Environment Concept (Y_1) + ζ_3

Business Performance /Y_3 = γ_3 Competitiveness (Y_2) + ζ_3

Feasibility test model was done using *measures of fit*. *Goodness of fit* is a combination measure between measurement and structural model. The FIT value range is 0-1, the greater

ISSN: 2223-9944, e ISSN: 2223-9553

of FIT value then the greater of the proportion of variant variables that can explain the phenomenon of the apples agribusiness with Environment Concept. The statistical test used in this research was the t test.

RESULTS AND DISCUSSION

The education of Respondents

The data showed that most respondents have low education level. Table 1 showed the educational background distribution of respondents.

Table 1. Educational background of respondents

Education Level	*Number of respondents*	*Percentage*
Elementary school	26	20.16
Junior high school	60	46.51
High School	28	21.71
Above high school	15	11.62
Total	129	100

Sources: Field data (2012)

Total respondents are 129 apple farmers. Most of the respondents (46,51%) graduated from junior high school, and only 11,62% graduated from diploma/universities/above high school. It means that most respondent didn't have high education level.

The age-wage distribution of Respondents

The data from the study showed that most respondents are in the productive age. Data respondents by age can be seen in Table 2 below:

Table 2. The age-wage distribution of respondents

Age group (years)	*Number of respondents*	*Percentage*
25-40	41	31.78
41-55	75	58.14
56-70	13	10.08
Total	129	100

Sources: Field data (2012)

Table 2 showed that most of respondents age are 41-55 (58%,14%) and only 10,08% are 56-70.

ISSN: 2223-9944, e ISSN: 2223-9553

The Land area for apple farming

The land area this study is the area of land used for apple farming. Most of the land area for apple farming by the respondent is their own land. The data distribution of the land area is presented in Table 3.

Table 3. The land area distribution of the respondent

Land Area (hectare)	*number of respondents*	*percentage*
<0.5	68	52.71
0.5-1.0	42	32.56
>1.0	19	14.73
Total	129	100

Sources: Field data (2012)

Table 3 showed that most of respondents have land area less than 0.5 hectare (52.71%), 32.56% have land area between 0,5-1.0 hectare and only 14.73% have land area more than 1,0 ha . It means that most of the respondents have a narrow area for the apples farming.

As result, data showed that 71% of respondents get Rp.15,000,000 a year as their income from apple farming, 19% get Rp.15,000,000 – Rp.30,000,000 a year as their income from apple farming, 14.73% get Rp.30,000,000 and above a year as their income from apple farm. It means that the majority of respondents still have a low income. The data showed respondents averagely have 5 labors.

The influences an apple agribusiness with Environment Concept toward Competitiveness

The analysis results obtained that the FIT value is 0.602, it means that the apple agribusiness with Environment Concept is competitiveness. The business performance that can be explained by the model is 60.2% and the remaining 39.8% can be explained by other variables.

Table 4. The analysis results of an apple agribusiness with Environment Concept

Variable	*Coefficient*	*SE*	*CR*
apple agribusiness with Environment Concept -> competitiveness	0.756	0.033	23.02*
apple agribusiness with Environment Concept -> business performance	0.257	0.146	1.76
competitiveness-> business performance	0.468	0.161	2.91*

CR * = significant at .05 level

ISSN: 2223-9944, e ISSN: 2223-9553

The analysis results about the influence of an apples agribusiness with Environment Concept toward competitiveness in Table 4 obtained the following equation:

Competitiveness = 0.756 apple agribusiness with Environment Concept * + 0.033

The apple agribusiness with Environment Concept has influence positive toward the competitiveness, it is significant in the 95% confidence level. Therefore the apples agribusiness with Environment Concept can be said affect the competitiveness of the apples agribusiness. It means that if an apple agribusiness with Environment Concept is improved then the competitiveness will increase. This result are consistent with the result of research that conducted by Rao and Hold, 2005. They state that the company which has attention at environment can increase the competitiveness.

The apples agribusiness with Environment Concept explained with six indicators, namely fertilizers, pesticides, funding, knowledge, resources, and harvest - post-harvest. The analysis results of variables apple agribusiness with Environment Concept and their indicators are presented in Table 5 below.

Table 5. The analysis results of the variable of apples agribusiness with Environment Concept and their indicators

Alpha = 0.890				
Indicators	*Mean*	*Coefficient*	*SE*	*CR*
fertilizers	3.19	0.392	0.091	4.3*
pesticides	2.80	0.292	0.137	2.13*
funding	2.90	-0.014	0.140	0.1
knowledge	3.52	0.288	0.162	1.78
resources	3.47	0.180	0.154	1.17
harvest – post harvest	3.04	0.078	0.094	0.83

CR * = significant at .05 level

The alpha value in Table 5 is 0.890, it means that the variable of apples agribusiness with Environment Concept have good internal reliability consistency because its value is ≥ 0.6. The fertilizers and pesticides indicators are significant in the 95% confidence level, even though 4 other indicators are fund, knowledge, resources and harvest-post harvest not significant. The fertilizer indicator has the value mean greater than the pesticides indicator, but the mean value of both indicators remain below 3.5 so that the using of fertilizers and pesticides natural needs to be improve in order to get apples agribusiness insightful environment to be the better. The indicator of fertilizer has coefficient the greatest among the five other indicators, it is 0.392 and significant in the 95% confidence level.

ISSN: 2223-9944, e ISSN: 2223-9553

The competitiveness variable is explained by two indicators. They are quality and continuity product. The results analysis of competitiveness variables and their indicators are presented in Table 6.

The alpha value in Table 6 is 0.643, it means that the variable of competitiveness has good internal reliability consistency because it is ≥ 0.6. The Mean value of quality product is 3.08. It is greater than the continuity indicator. But in general the Mean value of both indicators remain below 3.5 and significant in the 95% confidence level, therefore the two indicators of variable competitiveness still needs improvement to be the better. Coefficient of quality product has the greatest coefficient than continuity product indicator (0.866) and it is significant in the 95% confidence level.

Table 6. The results analysis of the competitiveness variable and their indicators

Alpha = 0.643				
Indicator	*Mean*	*Coefficient*	*SE*	*CR*
quality of the product	3.08	0.866	0.034	25.43*
continuity	2.83	0.854	0.030	28.87*

CR * = significant at .05 level

The practice of an apple agribusiness with Environment Concept must use natural fertilizers and pesticides. It has a positive affect toward competitiveness, it means that if fertilizers and pesticides of natural increased then competitiveness will increasing. Good quality apples the ones which have high competitiveness. The quality is measured by performance and taste. If the apples have good quality then consumer will interested to buy safe and healthy apple. Besides the good a quality, continuity of the apples availability should be ensured. It means that whenever consumers want to buy safe and healthy apple, they can get the apples easily. If the apple availability is ensured then consumer will not moved to another commodity.

The influence of an apple agribusiness with Environment Concept toward Business Performance

The analysis results of the apples agribusiness influence with Environment Concept toward business performance on Table 4 obtained the following equation:

Business Performance = 0.257 apples agribusiness with Environment Concept + 0.146

The variables of apples agribusiness with Environment Concept had no effect toward business performance significantly. Therefore the apple agribusiness with Environment Concept didn't affect the business performance in apples agribusiness. It means that if apple agribusiness with Environment Concept increased then business performance doesn't increase. It is consistent with the result of research that conducted by Rao and Hold, 2005, they states the company has attention at environment can affect the business performance. It is caused by external factor. The external factor is the consumers don't care about the important the safe and healthy apples yet. The price of safe and healthy apples are more expensive so that consumers don't choose to buy the apples.

ISSN: 2223-9944, e ISSN: 2223-9553

Business performance variable is explained by two indicators. They are income and sales. The results analysis of business performance variables and their indicators are presented in Table 7.

The alpha value in Table 7 is 0.819, it means that the business performance variable has a good internal reliability consistency because it is ≥ 0.6. The mean value of income indicator value is greater than that of sale indicator. The mean value of both indicators remains below 3.5 and significant in the 95% confidence level. Therefore indicators of business performance variables need to be increased, it is because the increase the income and product sale will motivate the farmers to increase their business performance.

Table 7. The analysis results of business performance variables and their indicators

Alpha = 0.819				
Indicator	*Mean*	*Coefficient*	*SE*	*CR*
income	3.06	0.924	0.019	49.72*
sales	2.95	0.918	0.018	51.54*

CR * = significant at .05 level

The influence of Competitiveness toward Business Performance

As the results, the influence of competitiveness toward business performance in Table 4 obtained the following equation:

Business performance = 0.468 competitiveness *+ 0.161

The competitiveness variables has positive affect toward business performance. It is significant at the 95% confidence level. It means that it the business performance increase increasing then the competitiveness will increase too. The increased business performance can be indicated by the increasing of apple farmer's incomes and the apple sales. The increased of competitiveness can be done by increasing the quality of apples and ensuring apples continuity. Therefore to increase the income of apple farmer and the apple sales then apple farmer should increase the apple quality and ensure the apples continuity. If the apple quality increased and the apples continuity ensured then consumers will feel satisfied and certain to buy the safe and healthy apple. It will increase the apple sales and incomes of apple farmer. It means the business performance increase.

CONCLUSIONS AND RECOMMENDATIONS

The conclusion of this study is the practice of apple agribusiness in Batu city with Environment Concept has a positive affect toward competitiveness. The apple agribusiness with Environment Concept uses the natural fertilizers and pesticides. The competitiveness of the apple agribusiness has a positive affect toward business performance. The apple agribusiness with Environment Concept has no direct affect toward the business performance, however the business performance of an apples agribusiness in Batu city can be increased by improving the apple competitiveness. From this study, it is suggested that the production

ISSN: 2223-9944, e ISSN: 2223-9553

process of the apple agribusiness with Environment Concept needs to be improved for increasing competitiveness and supported the increasing of the business performance.

REFERENCES

[1] Al-Tuwajiri et al., (2004). The Relations Among Environmental Disclosure, Environmental Performance and Economic Performance: A Simultaneous Equations Approach. *Accounting, Organizations and Society*, *29*(5-6), page 447-471. http://www.sciencedirect.com/science/article/pii/S0361368203000321. Accessed July 12, 2013.

[2] Chan, R. Y. K., & Lau, L. B. Y. (2001), "Explaining green purchasing behavior: a cross-cultural study on American and Chinese consumers", *Journal of International Consumer Marketing, 14*(2/3), pp. 9-4l.

[3] Downey & Erickson (1987). *Agribusiness Management,* Second Edition. McGraw-Hill, Inc.

[4] Hwang, H. (2009), GeSCA. Available at http://www.sem-gesca.org. Accessed April 12, 2011.

[5] _____(2009), "Regularized Generalized Structured Component Analysis," *Psychometrika, 74* (3), 57–30.

[6] Janaina, D., & Nathalie, F. (2007). Supply Chain Management and Supply Chain Orientation: key factors for sustainable development projects in developing countries. *International Journal of Logistics: Research and Applications 10*(3), September 2007, 235–250. http://www.tandfonline.com/doi/full/10.1080/13675560701466997. Accessed December 25, 2011.

[7] Parel, C. P. et al., (1973). *Sampling Design and Procedures*. New York: The Agric.Development Council Inc.

[8] Rao, P., & D. Holt (2005). Do green supply chains lead to competitive-ness and economic performance?. *International Journal of Opera-tions and Production Management, 25*(9), pp: 898-916. www.emeraldinsight.com/0144-3577.htm. Accessed February 29, 2012.

[9] Riccardo, V. (2010). Local Food at Italian Farmers' Markets: Three Case Studies. *Int. Jrnl.uar of Soc. of Agr. & Food, 17*(2), pp. 122–139. http://ijsaf.org/contents/17-2/index.html. Accessed April 29, 2011.

[10] Sitompul, S. M. (2007). *Kendala Produktivitas Tanaman Apel (Malus sylvestris Mill) di Wilayah Malang Raya.* The paper presented at the research seminar on PHK A2, Agroteknologi Dept., and Agriculture Faculty. Brawijaya University. Malang

[11] Tambunan, (2001). *Industrialisasi Di Negara sedang Berkembang*: kasus Indonesia. Ghalia Indonesia, Jakarta.

[12] Tenenhaus, M.,(2008). Component-based Structural Equation Modeling. *Total Quality Management. 19*(7-8).pp:871-886. Accessed May 06, 2012.