Can ISO 38200:2018 Wood and Wood Based Product   Chain of Custody Increase Business Competitiveness of Wood Industries in West Java ?

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ABSTRACT: *The purpose of this study was to determine the effect of the implementation of new standard ISO 38200:2018 to business performance and competitiveness for wood industries in west java. This research was conducted in several companies that use woods as raw material in west java of Indonesia with 180 respondents of companies that have plan to implement the ISO 38200:2018. The research background is due to lack of research on the benefits of ISO 38200:2018 in wood companies in West Java Province of Indonesia. The data collection was carried out by distributing electronic questionnaires on September until November 2019 and analyzing data processing use Structural Equation Model (SEM) and software Linear Structural Model (LISREL) version 8.70. The results of analysis show that the implementation of ISO 38200:2018 has significantly influenced business performance and competitiveness such as increase customer satisfaction index, increase sales, increase productivity and safety and employee satisfaction.*

1.   INTRODUCTION

Forests cover more than 30% of the Earth's land surface, according to the World Wildlife Fund. These forested areas can provide food, medicine and fuel for more than a billion people. Worldwide, forests provide 13.4 million people with jobs in the forest sector, and another 41 million people have jobs related to forests. Forests are a resource, but they are also large, undeveloped swaths of land that can be converted for purposes such as agriculture and grazing. In North America, about half the forests in the eastern part of the continent were cut down for timber and farming between the 1600s and late 1800s, according to National Geographic(livescience.2019).A new standard for supporting responsible use of wood and wood products has just been published ISO 38200:2018 Chain of custody of wood and wood-based products. This Standard specifies requirements for a chain of custody (CoC) of wood and wood-based products, cork and lignified materials other than wood, such as bamboo, and their products. A chain of custody relies on a control system to track and handle material throughout the entire supply chain or parts of the supply chain, including transportation, receipt, production, sale, resale and output declaration. This document is intended to enable tracking of material from different categories of source to finished products., This new ISO standard for tracing wood and wood products back to its sources and will help to provide

this information.ISO 38200:2018, Chain of custody of wood and wood-based products contain the requirements for a chain of custody of wood and wood-based products that allows users to trace the originality of wood and wood products every step along the supply chain (Iso.org, 2019).

ISO 38200:2018 have objectives are enabling the tracking of materials, evidence of compliance with legal requirements, control methods for the chain of custody. Target of implementation are sawmills and planning mills, wood industry, paper industry, timber and paper trade, joiners and carpenters,printing companies and publishing houses. Chain of Custody (CoC) certification is a certification system developed by ISO 38200:2018 to verify the origin of forest products used in the production process, originating from responsible sources, there are mechanisms that can trace the origin of forest products and ensure they are safe from mixing of uncertified raw materials. Because it relates to forest products, the chain of custody certification is applied to all supply chain companies, from which wood is processed, formed, packaged, and transported to the hands of consumers. Chain of custody certificates can be given to companies if the certification body can verify the origin of the wood used in production comes from certified sources, in addition to production, handling and packaging, storage until the hands of consumers are not mixed with other raw materials that are not certified (FSC.org, 2019). The standard is structured as follows, general requirements, organizational requirements, documents and records, inspection and control, complaint management, outsourcing, categories/identification and acceptance of input, material, due diligence system, risk assessment process, chain of custody methods, output information

The purpose of monitoring forest resources is to reduce unplanned deforestation, restore and rehabilitate degraded forests, sustainable management of forests, and evaluate the function of carbon sequestration by forests, forested lands and trees outside the forest to moderate the global climate (Fujita, 2010). Protecting tropical forests is becoming increasingly urgent because of the decline in forest areas by 6% and 17% global carbon dioxide emissions (Baccini et al., 2012). more is needed about ways to reduce forest loss and maintain oxygen stocks (Brown, 2013; Sills, et al., 2014; Lee et al., 2018). Most of the forest becomes deforestation and high forest degradation (Sloan and Sayer, 2015). Deforestation contributes greatly to increasing global greenhouse gas emissions and resulting in climate change (Harris et al., 2012). many people who live in or near these forests are highly dependent on forest resources and their livelihoods are threatened by deforestation (Sunderlin et al., 2005).

WWF (2005) summarizes that working in the forest industry has become the largest beneficiary of forest certification through improvements in the implementation of health and safety laws and guidelines. Dependence on well-trained staff, supported by increased training and training compliance with social taxation requirements has led to proven working conditions for those working in certified forests. Newsom & Hewitt (2005) examined and found that 91% of certified companies were required to increase the training of their workers, 82% increase safety, and as much as 64% increase workers' wages. Hirschberger Research (2005) as many as 183 out of 12 Russian forest companies that are certified covering a total area of more than 3.5 million ha found that the results of the forest certification strengthen work rights for forest company workers. Maria Tysiachniouk (2005) examined the majority of forest certified regional companies as workers' protection increased and postponement of salary decreased. Workers understand that certification can be used as a social protection tool.

There have been many companies that have certified forest and in 2019 companies in Indonesia have already certified as many as 580 certified (FSC.org,2019). many companies that are forest certified and in 2019 companies in Indonesia including Central Java Province Indonesia which have been certified , the main purpose of implementing ISO 38200:2018 is to fulfill government regulations and also requests from customers, there are several objectives to be achieved namely increase business performance such as customer satisfaction index, increase sales, increase productivity and safety and employee satisfaction.

The purpose of this study was to determine the effect of the implementation of ISO 38200:2018 on business competitiveness. The urgency of this study is the first because there has not been any study on the effect of new standard ISO 38200:2018 specifically on wood industries in Central Java Province and as input for the owners of wood-based companies to implement ISO 38200:2018. The novelty of this research is the first study that analyzes the effect of new standard ISO 38200:2018 implementation on business competitiveness of wood industries in Central Java Province Indonesia.

2. METHOD

Data analysis of this research using the Structural Equation Model (SEM) using a Linear Structural Model (LISREL) version 8.70. William and Gavin (2004) using LISREL to test the relationship between the latent variables and indicators - indicators. Construct validity and reliability

of the indicators in this study conducted by Confirmatory Factor Analysis (CFA). Testing the validity and reliability of the instrument was performed using confirmatory factor analysis to obtain valid and reliable data. Second-order confirmatory factor analysis (2nd Order CFA) is a measurement model consists of two levels. The first level of analysis performed on the latent constructs all aspects of the indicators and the analysis is done of latent constructs to construct its aspects. Through the CFA not only be done testing the validity of a construct (Construct Validity) but also reliability testing constructs (Construct Reliability). The construct has good reliability is if the value of Construct Reliability (CR) ≥ 0.70 and variance extracted values ≥ 0.50.

Data This study is based on questionnaires distributed in 180 respondents from 30 wood industries companies that have plan to implement ISO 38200:2018 Management System in West Java Province. Based on the previous studies and the purpose of writing this study, it created a research model as follows:
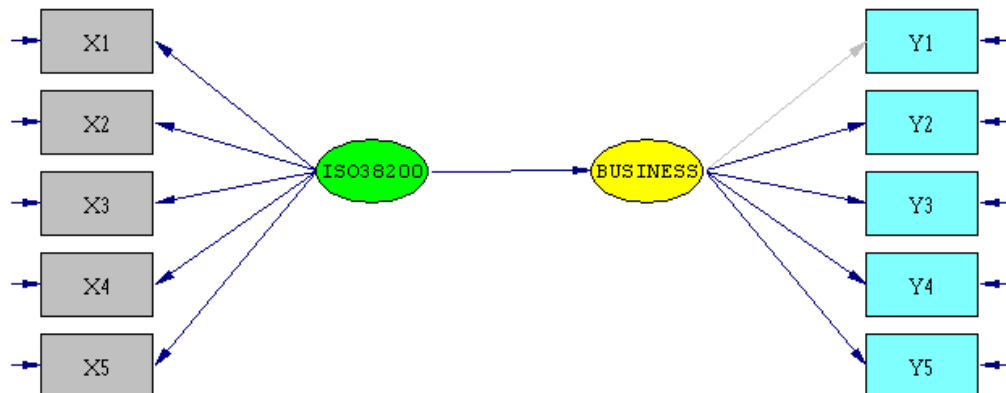

Figure 1 Model of Research

Note : The figure 1 is derived from the output of the Lisrel program (authors, 2019)

Based on the above research model made the following hypotheses:

1. Ho : There is a no significant and positive relationship between the implementation of ISO 38200:2018 (X) to the Business Performance (Y).

2. H1 : There is a significant and positive relationship between the implementation of ISO 38200:2018 (X) to the Business Performance (Y).

Based on the hypothesis of the indicator - an indicator of the variables used in this study are indicators of Dependent Variables X (Implementation of ISO 38200:2018), such as management

system (X_1), Documentation (X_2), material and products records (X_3), Sales (X_4), Risk Assesment (X_5) (ISO.org,2019), Indicators of Dependent Variables Business Performance (Y), such as as increase customer satisfaction index (Y_1), increase sales (Y_2), increase productivity (Y_3), safety (Y_4) and employee satisfaction (Y_5).

Table 1 Profile of Respondents

Job Title	Man	Woman	Total
Top Management	22	8	30
ISO Coordinator	15	5	20
Manager	23	7	30
Supervisor	75	25	100
Total	135	45	180

Note : The respondent profile table is derived from a summary of the questionnaire returned (authors, 2019)

The distribution of electronic questionnaire data from September until November on companies that implemented the ISO 38200:2018 were obtained from info.fsc.org

3. RESULTS AND DISCUSSION

The first step is to create a syntax program on Lisrell software after that the program is run to get the loading factor of ISO 38200:2018 variable (X) and Business Performance Variable (Y) and to determine the t value of each variable. Data analysis is done by Structural Equation Model (SEM) using a Linear Structural Model (LISREL) version 8.70 of Joreskog and Sorbom (2008), and the results are in the following figure.:
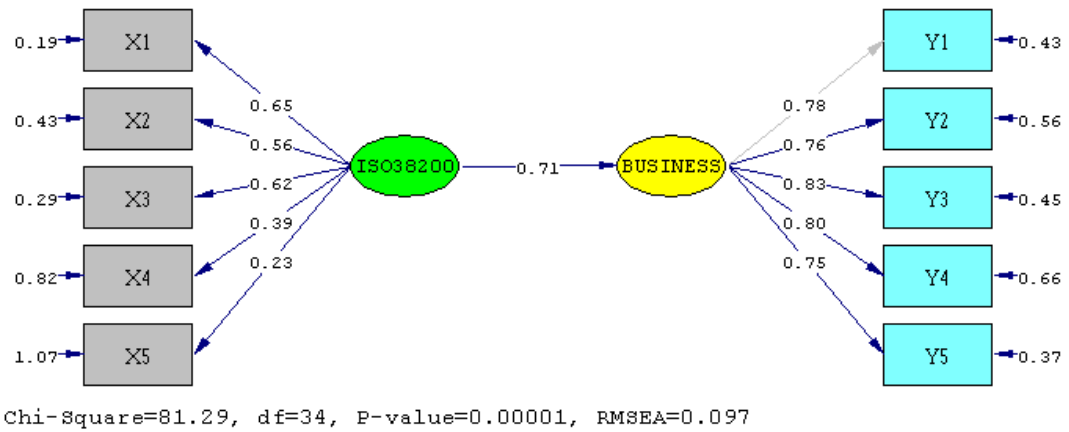
Figure 2 Loading factor Value Indicator

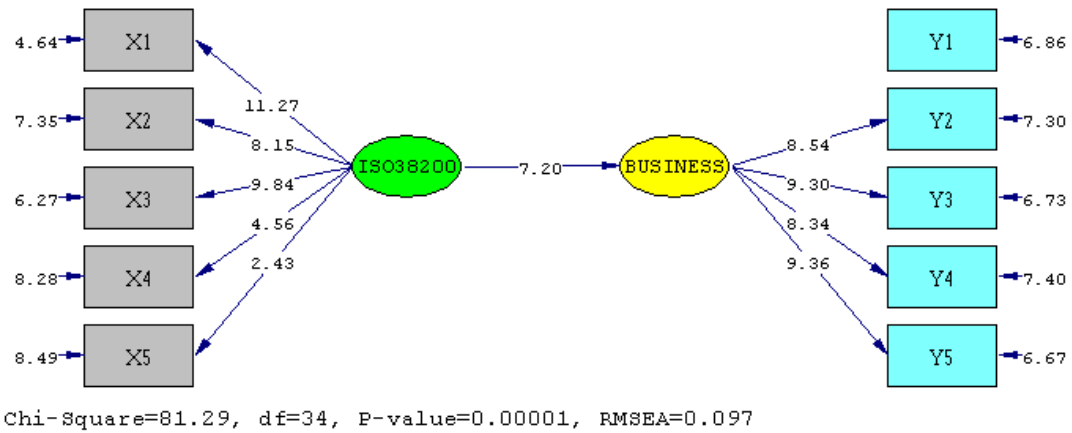Note : The figure comes from the output of the Lisrel program processing (authors, 2019)

Figure 3. t-Value Indicator

Note : The figure comes from the output of the Lisrel program processing (authors, 2019)

Based on figure 2 and figure 3 is concluded that no error variance negative value, and the value of the indicator CoC FSC above the loading factor of 0.5 (> 0.5) and for value loading factor <0.5 will be issued. The entire value of t which to test the significance of the value of the loading factor of greater than 1.96 (> 1.96). It is that all valid and significant indicator.

Table 2 Results of 2nd Order Analysis Indicators CFA Construct Validity

Variable	Indicator	Loading Factor	*T-Value*	Remark
ISO 38200:2018 (X)	Management System (X1)	0.65	11.25	Valid & Sig
	Documentation (X2)	0.56	8.15	Valid & Sig
	Material Record (X3)	0.62	9.84	Valid & Sig
	Sales (X4)	0.39	4.56	Valid & Sig
	Risk Assesment (X5)	0.23	2.43	Valid & Sig
Business Competitiveness (Y)	Customer Satisfaction (Y1)	0.78		
	Sales Increasment (Y2)	0.76	8.54	Valid & Sig
	Productivity (Y3)	0.83	9.30	Valid & Sig
	Safety (Y4)	0.80	8.34	Valid & Sig
	Satisfaction Employee (Y5)	0.75	9.36	Valid & Sig

Note The table comes from the output of the Lisrel program processing (authors, 2019)

Based on the above test results showed that the value of the loading factor is obtained entirely above 0.5 (> 0.5), and all the t value obtained is more significant than 1.96 (> 1.96). A summary of the results of the above analyses can be seen in Table 3.

Table 3 Analysis For the 2nd Order CFA OCB Construct Validity

Variable	Loading Factor	*T-Value*	Remark
ISO 38200:2018 (X)	0.71	7.20	Valid & Significant

Note : Table comes from the output of the Lisrel program processing (authors, 2019)

These results can be concluded that ISO 38200:2018 (X) has valid and significant. Results of validity are also reinforced by the value of Chi-Square (r) that generates a value of 81.29. The next step to calculate the value Construct Reliability (CR) and Variance Value entrance (VR), Construct

reliability is a measure of the internal consistency of indicators that show the formation of a variable degree in the variable formed. Extracted variance is a measure of how much of the variance of the indicators were removed by the variable created.

Table 4 Results of 2nd Order Analysis Construct Reliability.

Indicator	Loading Factor	Loading Factor2	1-Loading Factor2	CR	VE
Management System (X1)	0.65	0.42	0.58	0.86	0.63
Documentation (X2)	0.56	0.31	0.69		
Material Record (X3)	0.62	0.38	0.62		
Sales (X4)	0.39	0.15	0.85		
Risk Assesment (X5)	0.23	0.05	0.95		
Customer Satisfaction (Y1)	0.78	0.61	0.39		
Sales Increasment (Y2)	0.76	0.58	0.42	0.81	0.62
Productivity (Y3)	0.83	0.69	0.31		
Safety (Y4)	0.80	0.64	0.36		
Satisfaction Employee (Y5)	0.75	0.56	0.44		

Note : Table comes from the output of the Lisrel program processing (authors, 2019)

Based on the calculation formula CR construct reliability was obtained results and indicators VE for ISO 38200:2018 (OCB) of 0.86 (CR) ≥ 0.70 and 0.63 (VE) ≥ 0.50. and concluded that the variable CoC FSC (X) has good reliability and value constructs have good reliability. Businnes Competitiveness Indicators (OP) of 0.81(CR) ≥ 0.70 and 0.62 (VE) ≥ 0.50. and concluded that the Business Performance has good reliability and value constructs have good reliability. Therefore, based on the results of the analysis of the reliability calculation can be concluded that the reliability of the whole is a good indicator and conclude that the research meets the requirements of all phases of

testing.The next step is to carry out the Analysis of Goodness of Fit (GOF), GOF data obtained from the results of the software execution

Analysis *Goodness Of Fit (GOF)*

Test the suitability of the model in the overall model fit about the analysis of statistical GOF value generated by the program lisrel, for the relevance of the model (model fit) are good enough and for its model fit the criteria as shown in Table 5.

Tabel 5 *Goodness Of Fit*

Indeks Fit	Value	Value Standard	Remark
Chi-Square	80.19	>0.5	Fit
Root Mean Square Error of Approximation (RMSEA)	0.05	<0.08	Fit
Normed Fit Index (NFI)	0.94	>0.90	Fit
Non-Normed Fit Index (NNFI)	0.96	>0.90	Fit
Comparative Fit Index (CFI)	0.96	>0.90	Fit
Incremental Fit Index (IFI)	0.92	>0.90	Fit
Relative Fit Index (RFI)	0.90	>0.90	Fit
Goodness of Fit Index (GFI)	0.90	>0.90	Fit

Note : Table comes from the output of the Lisrel program processing (authors, 2019)

Based on the results of the analysis above can be seen that all fit indices stated that the model fit. These results indicate that the variable is declared valid and reliable so that it can be concluded that the overall model is still a good match. Model equation (Structural Equations) linear from 8.70 LISREL software obtained as follows:

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BUSINESS = 0.71*ISO38200, Errorvar.= 0.50 , R² = 0.50
          (0.098)                      (0.11)
           7.20                         4.42
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Figure 4 Structural Equations

Note : The figure comes from the output of the Lisrel program processing (authors, 2019)

Based on the results from all the above analysis, it can be seen that the implementation of ISO 38200:2018 (X) is a positive and significant effect on Business Competitiveness with t value equal to 7.04 The goodness of fit models is produced pretty good with chi-square value of 81.29. For the virtue of fit criteria, the other also already qualified as needed. Rated R Square of 0.50 means the Implementation of ISO 38200:2018 have affect the business Competitiveness by 50% while other factors influence 50%. So summarized and obtained the following regression equation (Business Competitiveness) = 0.71 x ISO 38200:2018 Implementation + Error.

4. DISCUSSION AND CONCLUSION

Based on the analysis of the results of research can be concluded that the implementation of the ISO 38200:2018 has a positive and significant impact on influenced business competitiveness performance such as increase customer satisfaction index, increase sales, increase productivity and safety and employee satisfaction so that it will increase the company's profit The research object not only in Banten province but could also be extended to other provinces. The results of this study the implementation of the ISO 38200 management system has an influence on the company's business performance and competitiveness so that companies that have not implemented it are recommended to immediately implement it, this study reinforces the results of previous studies. Purwanto et al.(2019) state that forest management influence significant and positive to business performance. Santoso et al.(2019) state that forest management influence significant and positive to business performance.

This study contributes to the research into the benefits of ISO 38200:2018 certification, The limitation of this study is that it does not discuss financial performance indicators, so in future research financial performance can be measured over a certain period of time. Other than that,a comparison of the financial performance of ISO 38200:2018 Certificate holders can be made. ISO 38200:2018 certification applies to all organizations that trade, process or produce wood and forest products. The benefits of implementing ISO 38200:2018 certification namely maintaining customers are the main benefits of certification, increasing new customers, increase in exports, increase company image, profit and increase, commitment to environmental responsibility which enhance the

company's image, promote, sustainable use of forest resources, improve communication with customers, prevent illegal logging, and improve management efficiency.

The results of the study show that ISO 38200:2018 certification is a prerequisite for competitiveness for companies. One of the benefits of this research is to convince the owners of timber and processing companies to get ISO 38200:2018 certified because the benefits of its application have been tested and also as a form of compliance with laws and regulations so as to enhance the good image of the company

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