Factors influencing the market requirements fulfillment in small medium enterprise fish processors in East Java

W Sulistyowati, Soemarno, A Efani, and M Primyastanto

*Faculty of Fisheries and Marine Science Brawijaya University Malang, Indonesia
2Faculty of Agriculture Brawijaya University Malang, Indonesia
3Faculty of Engineering and Marine Science, Hang Tuah University Surabaya, Indonesia.

*Corresponding author: Email: suliswahyu@gmail.com

Abstract. The development of the maritime and fisheries sector is directed to industrialization in order to prevent the dependence of Indonesia’s consumption needs on other countries, by utilizing this large local market as a basis for international markets development. However, there are still many obstacles in penetrating the market. The purpose of the research is to examine the effect of legal requirements fulfillment, product quality, agency coordination, human resources and regulation on the market requirements, the certification of a small and medium fish processor (SMFP). This descriptive quantitative research was carried out through survey and interview methods. Data were analyzed using Partial Least Square (PLS) to determine the effect of exogenous variables. The relationship evaluation showed that legal requirements, human resources, and product quality had a significant effect on the market requirements for certification (p = 0.001, 0.009 and 0.019, respectively), while the agency coordination and regulations had no significant effect on market requirements for certification (p = 0.268 and 0.678, respectively). Then the SME empowerment program needs to pay attention to the aspects of fulfilling the legal requirements and increasing the capacity of human resources.

1. Introduction
Small Medium Enterprise (SME) of fish processing in East Java is one of the national fisheries production and industrial bases because there are approximately 130 fish processing units, 63 of which are export-oriented. It indicates that the fisheries products from east Java have high competitiveness in export markets. In 2011, the province of East Java succeeded to export 341,775 tons of 351 types of fisheries products with a total value of 1,307,350,762 USD or 37.1% of fisheries export value [3, 4]. Such a condition exhibits that the fisheries production of east Java have given a significant contribution to the national economy.

Problems of the SME-FP are capital and product marketing. Nevertheless, there are many other aspects that do not support the existence of SME to produce or market the products, such as product standardization, product certification, unit, and marketing system formation in SME groups, brand image formation, businessman capability, permit facilities, and etc. There is also unnecessary constraints in which certification process must go through several different institutions, Provincial Fisheries Services, Health Services, Trade and Industry Services, National Agency of Drug and Food...
Control (NA-DFC), and Drug and Food Product Testing Agency of Majelis Ulama Indonesia (LPPOM-MUI) [14]. Such conditions may complicate the operations of the SMEs, particularly when competing with other SMEs in ASEAN countries. There are still few research bridging the fisheries processing SME with the market condition in particular.

This study focused on the effect of legal requirements fulfillment, product quality, institutional coordination, human resources, and regulation on market requirements: fisheries processing small medium enterprise (FPSME) certification that it can be feedback for SME development programs conducted by government or non-government organization (NGO).

2. Method
This study was carried out in 126 FP-SMEs distributed in 10 cities and regencies of East Java province, Surabaya, Sidoarjo, Gresik, Lamongan, Tuban, Probolinggo, Situbondo, Banyuwangi, Malang, and Pacitan. It is descriptive quantitative study using a survey approach in order to systematically and accurately describe the factual condition of a certain area or population. The study was done through direct observation and monitoring using questioners and qualitative data from interviews.

Intervariable relationships are causal. Independent variables were selected based on empirical conditions, FPSME activities in the coastal area, researcher’s capability, supporting theory, study site characteristics[15] as follows:

a) legal requirements fulfillment (X1)
b) product quality (X2)
c) institutional coordination (X3)
d) human resources (X4)
e) regulations (X5)

The dependent variable is Y1, the fulfillment of market requirements: FPSME certification determined by measuring the fulfillment of legal requirements (X1), product quality (X2), institutional coordination (X3), human resources (X4), and regulation (X5).

2.1 Data collection
The study used 126 respondents of SME owner using non-random sampling of purposive sampling technique from all groups of fish processing communities. The respondents should meet the following requirements: (1) The FPSME is run at a minimum of 2 years; (2) the FPSME owner has minimum selling of IDR 10,000,000.00, maximum selling of IDR 2,000,000,000.00 per year, and maximum net wealth of IDR 950,000,000.00; and (3) the owner has a maximum of 19 employees.

Primary data were obtained through direct interviews and questioners. The former was done to clarify if there were respondents misled in questioner filling. The latter is a questioner distribution technique to the selected respondents. The questioners were prepared several directed alternative answers to the subject matter and the research objective using Likert scale (scale 1-5) to determine the score of each question.

2.2 Data analysis
Data analysis applied descriptive and Partial Least Square (PLS) to see the effect of legal requirements, product quality, institutional coordination, human resources, and regulation on market requirements fulfillment.
3. Result and discussion

3.1 Measurement model (outer model) testing

In the estimation with the outer model, it is found that several indicators had a loading factor below 0.7, indicating that those factors are not valid to measure the construct[7] so that they should be taken out from the model. The indicators belong to the variable of quality product, human resource, and regulation. Then the value of each loading factor of its construct can be seen in Table 1 reflecting that all indicators have loading factor $> 0.7$, and they are valid to measure its construct so that PLS model has met the convergence validity requirement.

Figure 1. PLS model framework
Table 1. Convergence validity with a valid indicator in the measurement model of SME’s competitiveness

| Agency coord. | Product quality | Legal req | Market req: certification | Regulation | Human Res. |
|---------------|-----------------|-----------|----------------------------|------------|------------|
| AC 1          | 0.814           |           |                            |            |            |
| AC 2          | 0.826           |           |                            |            |            |
| AC 3          | 0.838           |           |                            |            |            |
| PQ 1          | 0.796           |           |                            |            |            |
| PQ 3          | 0.781           |           |                            |            |            |
| LR1           | 0.872           |           |                            |            |            |
| LR2           | 0.736           |           |                            |            |            |
| MRC1          |                 |           | 0.727                      |            |            |
| MRC2          |                 |           | 0.911                      |            |            |
| RE 4          |                 | 1.000     |                            |            |            |
| HR 3          |                 | 1.000     |                            |            |            |

Note:
AC 1: Ag. Coord.between the agency of government
AC 2: Ag. Coord.between agency & NGO
AC 3: Ag. Coord.between another agency of government
PQ 1: Product quality as a national standard
PQ 3: Processes technology
LR 1: Ownership of company legal doc
LR 2: Ownership of production eligibility doc
MRC 1: Ownership of the national certificate
MRC 2: Ownership of the international certificate
RE 4: Government diplomacy
HR 3: the ability

Discriminant validity test was then used to ensure that each concept of each latent variable is different from other variables. The model has good discriminant validity if squared AVE value of each exogenous construct exceeds the correlation between the construct and another construct [6]. Table 2 demonstrates that each construct exceeds the correlation value between the construct and other construct meaning that the PLS model has met good discriminant validity requirements.

Table 2. Discriminant validity value of SME’s competitiveness model

| Agency coord. | Product quality | Legal req | Regulation | Human res. |
|---------------|-----------------|-----------|------------|------------|
|               | 0.826           |           |            |            |
| Product       | 0.062           | 0.788     |            |            |
| quality       |                 |           |            |            |
| Legal req     | 0.228           | 0.286     | 0.807      |            |
| Regulation    | 0.321           | 0.346     | 0.446      | 1.000      |
| Human res.    | 0.258           | 0.169     | 0.221      | 0.291      | 1.000      |

Moreover, the construct reliability of Cronbach’s Alpha, Composite Reliability and Average Variance Extracted (AVE) values was tested. The construct has high reliability if it has Cronbach’s alpha value > 0.7, composite reliability value > 0.70, and AVE value > 0.50 [6]. Several of Cronbach’s alpha values were found below 0.7, so that the construct indicator of KP, LR, and MRS with the lowest loading factor needed to be eliminated. The model estimation after KP3, LR2, and MRS1 indicators were taken out from the model are given in Table 3.
Table 3. Construct reliability test of SME’s competitiveness model

| Construct         | Cronbach's Alpha | Composite Reliability | AVE   |
|-------------------|------------------|-----------------------|-------|
| Agency coord.     | 0.768            | 0.865                 | 0.681 |
| Product quality   | 1.000            | 1.000                 | 1.000 |
| Legal req         | 1.000            | 1.000                 | 1.000 |
| MRS               | 1.000            | 1.000                 | 1.000 |
| Regulation        | 1.000            | 1.000                 | 1.000 |
| Human Res.        | 1.000            | 1.000                 | 1.000 |

3.2 Structural (Inner Model) Model Testing

According to [2] and [5], structural model (inner model) evaluation in PLS analysis consists of Q square predictive relevance calculation, R Square variable endogenous calculation, and model significance test. Q² analysis demonstrates the strength of model prediction in which Q² of 0.02 or less means that the model has weak predictive relevance, 0.15 as moderate predictive relevance, and 0.35 as strong predictive relevance [5]. Result showed that the model Q² value with endogenous variable of market requirements: certification was 0.151 meaning that the model had moderate predictive relevance.

PLS model goodness of fit test can be seen from Standardized Root Mean Square Residual (SRMR) value. The PLS model could fulfill the goodness of fit model criterion if the SRMR value < 0.10 and the model has a perfect fit if the SRMR value < 0.08 [9] [10]. The goodness of fit model test indicates that the SRMR value was 0.083 meaning that this PLS model is fit so that it is worth to use for research hypothesis test. Significance test (partial effect test) of model estimation employed as a reference to test the hypothesis is presented in Figure 2. It is done at a 5% significance level (Table 4).

Table 4. Partial effect test in a structural model of SME’s competitiveness

| Construct | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
|-----------|---------------------|-----------------|-----------------------------|--------------------------|----------|
| KI - > MRS | 0.108               | 0.126           | 0.098                       | 1.109                    | 0.268    |
| KP - > MRS | 0.183               | 0.183           | 0.078                       | 2.346                    | 0.019    |
| LR - > MRS | 0.243               | 0.236           | 0.074                       | 3.269                    | 0.001    |
| REG - > MRS | 0.048               | 0.050           | 0.115                       | 0.416                    | 0.678    |
| SDM - > MRS | 0.195               | 0.186           | 0.074                       | 2.630                    | 0.009    |

Results showed that institutional coordination (KI) did not affect the market requirements: certification (MRS) (P = 0.268). As mentioned in [11], under SWOT analysis on the competitiveness of SME the strength of the SME marketing aspects covers (1) product quality, (2) customer interrelationship management, and (3) product innovation. However, the study has not included the institutional coordination variable in SME construction.

However, [12] found that the SME product marketing competitiveness was determined more by packing, design, and labeling. Trademark, packing, and design are a commitment or insurance for the customers, and these reflect a competitive superiority of the business against other competitors. Many government institutions, such as Trade and Industry Services, Fisheries Services, Agriculture Services, and others have carried out SME development program for packing and design.
Market requirements that should have been fulfilled by the SMEs are home food industry business certificate, production eligibility certificate, local food-NA-DFC certificate, halal certificate, and Indonesian National Standard certificate (optional). The SME must have a Hazard Analysis and Critical Points (HACCP) certificate that requires the production eligibility certificate. All these eligibility certificates indicate the ownership of the SME legality certificate, such as business permit license, company registration document, and industry registration document. Thus, the fulfillment of the legal aspects of the SME highly influences the fulfillment of market requirements to market the product.

[1] stated that SME’s constraints in the global market are lack of access to the management and the international regulations. The SME must legally build a brand image in the international market to have the recognition. Of course, it can only be done through the fulfillment of product quality and other quality requirements established, including required certificate documents. The requirements sometimes highly vary among the countries, these should not be complicated and expensive. The SMEs may need longer time to get reliable information on market opportunity and new relevant regulations.

Figure 2. PLS model estimation of factors influencing market requirement certification at $\alpha = 5\%$. 

Note: 
- Constructs
- Construct's indicator

Ownership of company legal document

Product quality as national standard

Ag. Coord. between agency of government

Ag. Coord. between govern. & NGO

Ag. Coord. between other agencies

Ability

Government diplomacy

Legal Req

Product Quality

Agency Coordination

Human Resource

Regulation

Mar. Req : certification

National certificate

Ownership of company legal document

Product quality as national standard

Ag. Coord. between agency of government

Ag. Coord. between govern. & NGO

Ag. Coord. between other agencies

Ability

Government diplomacy

Legal Req

Product Quality

Agency Coordination

Human Resource

Regulation

Mar. Req : certification

National certificate

0.000

0.000

0.000

0.000

3.269

2.346

9.271

15.760

13.241

0.000

0.000

0.000

0.000

0.000

0.000

0.000

0.000

0.000

The 1st International Conference on Fisheries and Marine Science IOP Publishing
IOP Conf. Series: Earth and Environmental Science 236 (2019) 012134 doi:10.1088/1755-1315/236/1/012134
Meanwhile, the FPSME-related regulations do not have any effect on the market requirements certification (p = 0.678). Several regulations issued by the government as SME empowerment efforts, such as decree No. 9/1995 concerning small business and government regulation No. 44/1997 about a partnership. The latter addresses that partnership is needed to accelerate the achievement of self-support and a strong national economy. There is also President’s decree and Minister’s regulation, such as Keppres No 127/2001 concerning the type of business reserved to small business and open to medium and large scaled businesses under partnership system, and etc. including loan reconstruction for the SME. Nevertheless, support of those regulations has not been able to significantly encourage the SMEs to obtain the needed market requirements. It is necessary to know whether the regulation socialization is not enough or the regulation has not represented the need of FP-SMEs.

Human resources are measured with their knowledge, skill, ability, spirit entrepreneur, and many other developmental programs followed that give a highly significant and positive effect on the market requirements fulfillment, certification (MRS) (P = 0.009). The better the competence of the human resources is, the higher the encouragement to fulfill the market requirements to be able to penetrate the market, and vice versa. In other words, the good competence of the human resources will increase the awareness to arrange the product certification in order for market competition.

It is in line with [16] that major constraint of the SME in regional market requirement is low human resources quality and low entrepreneurship competence. Meanwhile [10] who studied 7,443 SMEs in Malaysia found that effective entrepreneurship and human resources management significantly affect the SME performance. Therefore, based on PLS model estimation, this study found that legal requirements fulfillment, human resource competence, and product quality significantly and positively influence market requirements, the certification. Other variables, institutional coordination, and regulation do not affect the fulfillment of market requirements.

In the free trade era, the trade will highly prioritize the standardization and certification. Product standardization as one of the market requirements can be achieved through the fulfillment of legal requirements, the preparation that should have been planned and applied at the beginning of SME establishment. The present study found that legal requirements always become prerequisite to meet the market requirements. This fulfillment could be able to increase product compatibility in the free trade era. Product standardization and certification is closely related with the continuity of the raw materials and the product quality following Good Manufacturing Practices regulation, the presence of good coordination between government institutions and private sectors, creative and hard-working human resources, and regulations supporting the SME operations.

Based competitive FPSME model presented in Figure 2, it was found that among factors affecting market requirements: certification (MRS), i.e. legal requirements LR, product quality PQ, institutional coordination IC, human resources HR, and regulation RE, legal requirements (LR) give the highest effect, followed by competent human resources, and then SME’s quality product. Therefore, LR fulfillment needs to be highly considered through socialization and operational facilities development.

4. Conclusion
Legal requirements, human resources, and product quality were factors that gave a significant effect on the market requirements for certification (p = 0.001; 0.009 and 0.019, respectively), while coordination of agencies and regulations have no significant effect on the market requirements for certification (p = 0.268 and 0.678, respectively). Then the SME empowerment program needs to pay attention to the aspects of fulfilling the legal requirements and increasing the capacity of human resources.
5. References

[1] Char A K, Yasoa M R B and Z Hasan 2010 *JBR*. 1 66-75
[2] Chin, W W 1995 *JSYOR*. 2 315–319
[3] Fisheries and Marine Services (FMS) of East Java Province 2014 *Fisheries Commodity Export Development in East Java Statistics of Fisheries and Marine Services East Java Province Surabaya* (Pemprov Jawa Timur) p 121
[4] Fisheries and Marine Services (FMS) 2014 *Fish Role in Supporting Food Security and National Nutrition* Addressed by Dir PDN/P2HP/KKP, in FGD-P2HP/KKPOctober 2th, 2014: Domestic Marketing Dynamic Surabaya (Pemprov Jawa Timur) p 121
[5] Ghozali I 2011 *Structural Equation Modeling, Alternative Method Partial Least Square* Edisi 3 Universitas Diponegoro Publisher Semarang [in Indonesian]
[6] Ghozali I and H Latin 2014 *Partial Least Squares Concept, Method, and Application Using WarpPLS 4.0 Program Seconded* (Semarang: Universitas Diponegoro Publisher) p 90
[7] Hair J R, Anderson R E, Tatham R L and Black WC 2006 *Multivariate Data Analysis with Readings, 3th Edition* (Macmillan Publishing Company, New York) p 201
[8] Jogiayanto 2011 *Variance-Based Concept and Structural Applications of Equation Modelling in Business Research* (UPP STIM YKPN, Yogyakarta) p 119
[9] Kline R B 2011 *Principles and Practice of Structural Equation Modeling 3rd edition* (New York: The Guilford Press) p 371
[10] Moorthy M K, A Tan, C Choo, Chang S W, J T Y Ping, and T K Leong 2012 *HRMARS*. 2 224-239
[11] Nuvriasari A, Wicaksono G, Sumiarisih 2015 *Market and entrepreneurship oriented-Based Competitiveness Development Strategy Model of Creative Industry* (Universitas Mercu Buana: Yogyakarta) p 231
[12] Omar C M Z C and T Anas 2014 *JIBSS*. 3 76-87
[13] Rahayu W P, Nabahan H B, Hariyadi P C, and Novinar 2012 *Food Security to Support the Competitiveness of Micro, Small, Medium Enterprise for National Economic Development Department of Food Science and Technology; and Seafast Center* (IPB: Bogor)
[14] Sulistyowati W, M A Sofijanto, B Rianto and Bimo 2018 *OSR-JAVS*. 11 33-41
[15] Supranto J 2004 *Research Proposal with Samples* (UI Press Jakarta) p 121
[16] Susilowati Y S 2010 Bulletin Ekonomi 870-170

Acknowledgment

Great appreciation would be given to the Ministry of Research and Technology & Higher Education that provided Dissertation Research Grand year – 2017. We also thank Nadia Karima for her assistance in the field and SMEs in East Java for giving research-related information.