Measurement of maturity of small medium agroindustry business processes in Jember, Indonesia

W Utami¹, N G Khrisnabudi¹, L Farida¹, M Apriono¹, E S Utami¹, Sudarsih¹, T A Gumanti¹, D A R Wulandari²

¹Faculty of Economics and Business, University of Jember, Indonesia
²Faculty of Computer Science, University of Jember, Indonesia

Email: wiji.feb@unej.ac.id

Abstract. Business competition cannot be separated from the existence of Micro, Small and Medium Enterprises (MSMEs) as the basic of the Indonesian economy. The number of agricultural sector MSMEs in East Java has a greater proportion than non-agricultural MSMEs. The economies in Jember Regency are supported by one from the agriculture sector. Maturity of business processes is one of the factors that greatly influences the readiness of MSMEs in implementing information systems in supporting their business operations. The assessment of business process maturity can be done using the Business Process Orientation Maturity Model (BPOMM) where this model has nine assessment areas. The study was conducted at three Agroindustry MSMEs in Jember Regency. This study compares the level of business process maturity of each MSME and provides input related to the areas that need to be improved by the three MSMEs. The results obtained from this research are the maturity of the third MSME business processes at level 1 (Ad Hoc) where the Mister Te maturity value is 3,859; UD Mitra Jamur of 3,484; and Bestcow 2,917.

1. Introduction

Business world competition cannot be separated from the existence of Micro, Small and Medium Enterprises (MSMEs) as the backbone of the Indonesian economy. MSMEs in Indonesia have a proportion of 99.99% of the total business actors [9]. The results of the National Social Economic Survey stated that in 2012, the number of MSMEs in East Java reached 6.8 million, then it increased to 9.59 million in 2017 [11]. A total of 9.59 million MSMEs consisted of 4.61 million of non-agricultural MSMEs and 4.98 million of agricultural MSMEs. Based on these data, it can be seen that in East Java, there are more MSMEs engaged in the agricultural sector compared to MSMEs operating in the non-agricultural sector, this is because Indonesia's climate and natural potential supports the agricultural sector.

MSMEs that are engaged in the agricultural sector focus on the food crops subsector, the horticulture subsector, the fisheries subsector, the livestock subsector, and the forestry subsector [10]. Agriculture can be said as supporting the lives of the majority of Indonesian people. The economy in Jember Regency itself is supported by many from one of the agriculture sector [7]. The agricultural sector is also one of the main components in the government's programs and strategies to reduce poverty. Based on data from the World Bank, formerly, Indonesian agriculture has achieved good results and made important contributions in Indonesia's economic growth, including creating jobs and reducing poverty dramatically. Therefore, one of the efforts to increase the added value of agricultural products is to start collaborating with industry, so that the agro-industry appears. Agro-industry is a company that processes materials derived from plants and animals [1]. Agro-industry is a motor of regional development, economic growth, and national stability. Agro-industries can contribute to the national economy are MSMEs. The research objects in this study include 3 MSMEs in Jember city, the first one is Mr. Te, a MSME that process food ingredients made from cassava flour, the second one is UD Mitra Jamur, a MSME that sell oyster
mushrooms and their preparations, and the third one is Bestcow, a MSME that sell milk and its processed products.

This study has the following objectives: (1) Obtain the measurement results of Agroindustry-based MSME business process maturity in Jember based on the BPOMM model. (2) Knowing the characteristics of MSME based on the area at each level of maturity of its business processes. (3) Providing recommendations related to areas that need to be improved in the management of MSME businesses.

2. Theoretical Basis

2.1 Micro, Small and Medium Enterprises (MSMEs)

The definition of MSMEs according to Law No. 20 Article 1 of 2008 concerning Micro, Small and Medium Enterprises, namely:

1. Micro Business is productive business owned by individuals and / or individual business entities that meet the criteria for Micro Business as stipulated in the Act.
2. Small Business is a productive economic business that stands alone, which is carried out by individuals or business entities that are not a branch of the company that is owned, controlled, or becomes a part either directly or indirectly of a business that meets the Small Business criteria as referred to in the Act Invite
3. Medium Business is a productive economic business that stands alone, which is carried out by an individual or business entity that is not a subsidiary or branch of a company that is owned, controlled, or is part either directly of a Small Business or Large Business with a net worth or annual sales revenue as referred to in the Act.

In addition, according to article 6 of Law No. 20 Year 2008 concerning the criteria for MSMEs in the form of capital are as follows:

1. Micro Business Criteria are as follows:
   i. Has a maximum net asset of Rp.50,000,000, - excluding land and buildings for businesses; or
   ii. Has annual sales revenue of at most Rp. 300,000,000.

2. Small Business Criteria are as follows:
   i. Has a net asset of more than Rp 50,000,000 up to a maximum of Rp 500,000,000 excluding land and buildings for business premises; or
   ii. Has annual sales revenue of more than IDR 300,000,000 up to a maximum of IDR 2,500,000,000.

3. Criteria for Medium Enterprises are as follows:
   i. Has a net asset of more than Rp.500,000,000, - up to a maximum of Rp10,000,000,000, - excluding land and buildings for business premises; or
   ii. Has annual sales results of more than IDR 2,500,000,000, up to a maximum of IDR 50,000,000,000.

2.2 Agro-industry

Agro-industry comes from two words: agriculture and industry, which means an industry that uses agricultural products as its main raw material or an industry that produces a product that is used as a means or input in agricultural business [12]. The definition of agro-industry can be described as industrial activities that utilize agricultural products as raw material, design, and provide equipment and services for these activities, thus agro-industry includes the agricultural product processing industry, industries that
produce agricultural equipment and machinery, agricultural input industries (fertilizer, pesticides, herbicides etc.) and the agricultural service industry.

When viewed from the agribusiness system, agro-industry is a part (subsystem) of agribusiness that processes and transforms agricultural products into intermediate goods that can be consumed directly and goods or industrial production materials used in the production process such as tractors, fertilizers, pesticides equipment, machinery, and others. Based on these restrictions, agro-industry is a broad subsector that covers the upstream industry from the agricultural sector to the downstream industry [12]. Upstream industry is an industry that produces agricultural equipment and machinery and industrial production facilities used in the process of agricultural cultivation. Downstream industry is an industry that processes agricultural products into raw materials or goods that are ready for consumption or is a post-harvest industry and processing of agricultural products.

2.3 Business Processes

A business process is a group of activities that accept one or more inputs and produce outputs that have value for the customer [2]. A business process is a collection of activities or structured work that are interrelated to solve a particular problem or produce a product or service in order to achieve certain goals as shown in Figure 2.1. Another understanding of business processes is a logically related repetitive chain that uses company resources to process an object (physical or mental) with the aim of achieving measurable and predetermined products or results for internal and external customers. The classification of business processes according to TOPP includes:

a. Main process is a process that produce value, ranging from receiving materials from suppliers to activities to customers.

b. Support process is a process that do not directly produce value but are needed to support the main process. Includes financial activities and personnel management.

c. Development process is a process to improve value chain performance with the main and supporting processes. For example product development.
2.4 Business Process Management

Business process management is a field related to designing, controlling and optimizing company business processes. Business process management is an organized management method that aims to improve the quality and service development through identification, design, modeling, documentation, controlling and improving business processes to achieve integrated operational results related to resources and guidelines for achieving the strategic goals of an organization. Business process management is divided into 3 levels, namely multi process management, process model management, and process instance management [4]. The tasks of each level of business process management are shown in Figure 2.2 below.
Multi process management is the highest level in an organization and has the highest authority in an organization/company. At this level there are two activities, namely identifying the main processes in the organization (identification) and conducting evaluation processes related to the process based on priority level (prioritizing).
Process management model, which is the middle level in the management of an organization / company. At this level there are a number of activities, starting from re-learning in accordance with the existing process before there is a change (discovery), analyzing each process (analysis), redesigning after the analysis process (redesign), then proceed to the implementation stage (implementation) but previously there must be training activities first, then control the business processes that have been run (controlling). These activities are a cycle which means that after reaching the controlling stage it returns to the initial stage of discovery.

Process instance management is the lowest level in an organization / company. Activities included in the level that starts from planning (planning) such as determining the schedule of activities and resources needed, then carrying out the process of execution (execution), then carrying out monitoring activities (monitoring) to prevent undesired employee / staff behavior, and the fourth activity is to carry out an adaptation process. These activities are a cycle which means that after reaching the stage of adaptation then returns to the initial stage of planning.

2.5 Business Process Maturity Model (BPMM)

Business Process Maturity Model (BPMM) is one of the success factors in an organization or company. BPMM is an understanding that processes the life cycle or stages of development that can be clearly defined, managed, measured and controlled at all times [6]. In addition, BPMM is also used as an assessment and also as a guide to improve the ability of business processes and a concept that compares the level of maturity of the company's organizational processes related to industry standards.

2.6 Business Process Orientation Maturity Model (BPOMM)

Business process orientation (BPO) is a concept introduced by McCormack and Johnson [3] that corporate goals are emphasized on the process of how the business can reach maturity through a series of performance measurements. Business Process Orientation Maturity Model is a model for calculating the maturity of business process orientation in an organization / company. Business process management is an approach to improve business process orientation [8]. The relationship between BPM can increase BPO of a company can be seen in Figure 2.3. Based on these pictures it can be concluded that by increasing BPM accompanied by the process of measuring BPO maturity will produce the value of BPO in an organization / company based on 4 levels of maturity, so that by knowing how much the level of BPO maturity in the company can improve the condition of the company's BPO to higher level.
There are 4 levels of company maturity based on BPO Maturity Model, namely Ad Hoc, Defined, Linked, and Integrated. Explanation of each level is as follows:

i. Ad Hoc is an unstructured and unclear process. The work steps in the company are undefined, most organizational structures are still traditional, based on functions within departments within the company. The best practice process flow has never been stated and applied.

ii. Defined is the basic process defined and documented in a flow chart. Work began to require a combination of departmental processes, so that regular meetings were held by the functional areas of the company to coordinate. The application of the best practice process flow is only stated but not yet implemented.

iii. Linked, there is coordination between managers and the management elements of the process to control. The work process has expanded, the process flow has included many processes from various departments to make the process flow intact. The best practice process flow has been stated and is expected in several aspects.

iv. Integrated is the definition of internal actors (owners, employees, etc.) and external companies (customers, suppliers, etc.) that have clearly enabled the company to have an organizational structure and work that is based on process. Widespread process-based steps and system management will often be used in organizations.

The BPO scores for each level according to McCormack and Johnson are as shown in Table 1 below.

| BPO Score | Level    |
|-----------|----------|
| 1 – 4     | Ad Hoc   |
| 4 – 5,5   | Defined  |
| 5,5 – 6,5 | Linked   |
| 6,5 – 7   | Integrated |

Source : Skrinjar & Trkman [8]

The area of business process orientation evaluation in this model is that there are nine areas as shown in Table 2 below:
Table 2. Assessment Area of Business Process Orientation

| No | Code | Area                                      |
|----|------|-------------------------------------------|
| 1  | Sv   | Strategic View                            |
| 2  | Ddp  | Process definition and documentation      |
| 3  | mmp  | Process Measurement and Management        |
| 4  | Pos  | Process organizational structure          |
| 5  | Uk   | People management                         |
| 6  | Pok  | Process Organizational Culture            |
| 7  | Tu   | Market Orientation                        |
| 8  | Vd   | Supplier’s Outlook                        |
| 9  | Pip  | Information System Support                |

Source: Skrinjar & Trkman [8]

3. Research Methods

The first stage in the development of research instruments is defining variables. The variables in this study are based on nine areas in the Business Process Orientation Maturity Model (BPOMM), namely strategic views, process definition and documentation, process measurement and management, organizational structure process, people management, process organizational culture, market orientation, and supplier views. Each area is outlined in several statements to assess BPM practices in that area. To facilitate the assessment, it is necessary to make an assessment rubric. Each statement is assessed using a Likert scale in nine assessment areas based on the assessment rubric that has been made. Sub-area values will be averaged to produce values in each area then area values will also be averaged which will result in the maturity of the business/organization business process. The final averages are grouped according to maturity according to McCormack and Johnson.

The next step is collecting data using observation, interviews and questionnaires. Data analysis was performed based on answers from a scale that was determined on the questionnaire. This scale is used to calculate the total number of answers and will be averaged to obtain the maturity value of the company's business processes. The average value will be used to analyze the comparison of the level of maturity between one MSME and another MSME. Then we determine the recommendations for each MSME in accordance with the level of maturity of each business process. The data was analyzed using pattern matching analysis, namely by comparing patterns based on empiricism with predicted patterns.

4. Results and Discussion

The level of business process maturity between MSMEs (Bestcow, Mister Te, UD Mitra Jamur) has a different value. Table 3 explains the results of a comparison of the orientation of business processes in each MSME.

Table 3. Comparison Results of Business Orientation Sections

| Assessment Area                        | Bestcow | Mister Te | UD Mitra Jamur |
|----------------------------------------|---------|-----------|----------------|
| Strategic View                         | 4.6     | 6         | 5.6            |
| Process definition and documentation   | 1.667   | 1.833     | 1.833          |
| Process Measurement and Management    | 3.571   | 5.142     | 3.714          |
| Process organizational structure       | 2       | 2.285     | 2.285          |
| People management                      | 3.4     | 4         | 3.4            |
Based on Table 3, it is found that the maturity level of the third MSME business processes is at level 1 (Ad Hoc) because the three MSMEs are in the range of values 1 - 4. Mister Te has the highest business process maturity value of 3.859. The second highest rank is UD Mitra Jamur with a value of 3.484. While the UMKM which has the lowest value is Bestcow with a value of 2.917. The comparison of the highest and lowest evaluation areas in each MSME is shown in Table 4.

Table 4. Comparison of Areas in MSMEs

| Assessment Area          | Bestcow          | Mister Te          | UD Mitra Jamur       |
|--------------------------|------------------|--------------------|----------------------|
| Highest                  | Strategic View   | Strategic View     | Strategic View       |
| Lowest                   | Information      | Process Definition | Process Definition and Documentation |
|                          | System Support   | and Documentation  |                      |

Based on Table 6, the lowest area value at Bestcow is the information system support area. That is because these MSMEs have not been oriented to the use of information systems to support their business operations and Bestcow only uses Ms. Office to help recording sales and production. The MSME also only uses the telephone to establish relationships with external parties such as customers and suppliers. The lowest area value of Mister Te and UD Mitra Jamur is in the area of process definition and documentation, this is because Mister Te and UD Mitra Jamur does not document business processes such as Standard Operational Procedures (SOPs), flowcharts, and other documentation. Mister Te and UD Mitra Jamur only conveyed directly to employees about the organization's business processes as well as the existing business process SOPs.

The third highest area value of MSMEs is the strategic view area, this is because these three MSMEs make monthly meetings to discuss improvements and planning for their business processes. Policies and strategies are communicated and disseminated to all employees but sometimes there are also some policies that are not communicated to all employees but only to the employees concerned. Plans to improve their business processes are also influenced by customers and operating strategies. The difference between the three MSMEs lies with the owners of MSMEs where the owners of Mister Te and UD Mitra Jamur are actively involved in efforts to improve business processes such as monitoring employee performance in each process, while the Bestcow owner is not actively involved, meaning that it only does remote monitoring and there is no regular schedule from the Bestcow owner to monitor.

BPOMM area analysis is the analysis of each area by calculating the average of each area. The average results of each area are shown in Table 5 below.

Table 5. BPOMM Analysis

| Area                        | Value |
|-----------------------------|-------|
| Strategic View              | 5,4   |
| Process definition and documentation | 1,778 |
| Process Measurement and Management | 4,142 |
| Process organizational structure | 2,19  |
| People management           | 3,6   |
Based on Table 7, the highest assessment area value is strategic view. All three MSMEs have regular meeting schedules, which are once a month to discuss matters of business process improvement and planning. Policies and strategies are also communicated to all employees, but there are some things that are only conveyed to the employee concerned. The three MSMEs also share the principle that plans to improve business processes are influenced by customers and operating strategies. The lowest or weakest area value is the definition and documentation of the process. All three MSMEs have not yet defined and documented their business processes in writing. They have not made SOPs, flowcharts, or other documentation that explains their process activities. The three MSMEs only explained the SOPs for each of their processes verbally to all their employees.

5. Conclusions

Three MSMEs observed in this study are at the level 1 maturity level, namely Ad Hoc. That is because the three MSMEs have not defined and documented processes properly and clearly and have not implemented information systems to assist existing business processes. The value of the maturity of the third MSME business processes are Mister Te with a value of 3.859; UD Mitra Jamur with a value of 3.484; and Bestcow with a value of 2.917.

Acknowledgment

The research was funded by LP2M Universitas Jember through KeRis (Research Group) B-SES (Building A Sustainable Entrepreneurship in SME's).

References

[1] Austin J E 1981 *Agroindustrial Project Analysis* Maryland: The John Hopkins University Press
[2] Hammer M, Champy J 1993 *Reengineering the Corporation: A Manifesto for Business Revolution.* Harper Collins New York
[3] McCormack K P, Johnson W C 2001 *Business Process Orientation: Gaining the E-Business Competitive Advantage* CRC Press
[4] Mendling J, Baesens B, Bernstein A, Fellman M 2017 Challenges of smart business process management: An introduction to the special issue *Decision Support Systems* 100 1-5
[5] Nuritha I, ER M 2016 Analisis Deviasi Model Proses Bisnis Standar dan Aktual Berdasarkan DiDistance Measure: Perusahaan Produsen Semen *Jurnal Sistem Informasi* 630-645
[6] Okreglick M, Mynarzova M, Kana R 2015 Business Process Maturity in Small and Medium Sized Enterprise *Polish Journal of Management Studies* 121-131
[7] Rochman M, Badjuri, Luthfi A 2015 Analisis Potensi Pertumbuhan Ekonomi Kabupaten Jember 2010-2013 *Artikel Ilmiah Mahasiswa* 2015
[8] Skrinja R, Trkman P 2013 Increasing Process Orientation with Business Process Management: Critical Practices *International Journal of Information Management* 48-60

[9] Suci Y R 2017 Perkembangan UMKM (Usaha Mikro Kecil dan Menengah) di Indonesia *Ilmiah Cano Ekonomos* 51-58

[10] Tampun J S 2014 Peranan Sektor Pertanian Dalam Pembangunan Wilayah Kota Tomohon *Jurnal Pertanian Universitas SAM Ratulangi*

[11] Tri A 2018 Pertumbuhan Jumlah UMKM di Jatim Sangat Signifikan. Diambil kembali dari sureplus.id: https://www.sureplus.id/2018/08/19/pertumbuhan-jumlah-umkm-di-jatim-sangat-signifikan

[12] Udayana I G B 2011 *Peran Agroindustri Dalam Pembangunan Pertanian* Universitas Warmadewa.