

How Capable are Small and Medium Enterprises in Conducting Innovation?

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Abstract—Several studies have recognized innovation as an essential aspect of improving competitiveness. Prior studies also argued that small- and medium-sized enterprises (SMEs) should increase their innovation and technology to deal with competition. However, just how SMEs are capable of performing innovation still needs to be measured. This study purposes assessing the capability of SMEs to conduct the technological innovation. Technological innovation capability (TIC) is defined as a comprehensive set of characteristics of a company that facilities and supports its technological innovation strategies. The seven TICs in this study consist of learning, R&D, resources allocation, manufacturing, marketing, organization, and strategic planning capabilities. A sample of 62 companies located in Sidoarjo, Indonesia, in particular Wedoro—which is one of the footwear centers in East Java, was purposively selected from footwear SMEs. This study distributed questionnaires to collect the primary data and proceeded to analyze the data using descriptive analysis. The findings demonstrated that the majority of footwear SMEs in Sidoarjo are small businesses. Overall, their TICs are in the medium category, with the highest average strategic planning capability (4.96), with the lowest average being learning capability (1.83). Some solutions are suggested to increase these firms' TICs.

Keywords—footwear SMEs, technological innovation capabilities, Sidoarjo

I. INTRODUCTION

The industrial sector of footwear of Indonesia has achieved a fifth-place ranking among footwear exporter worldwide after China, India, Vietnam, and Brazil. From data gleaned from the World Footwear Market 2016, Indonesia reached a total production of one billion pairs of shoes [1], and the market share for Indonesian footwear in the international market has now attained 4.4 percent [2]. This sector is growing at 8.51 percent, higher than the average of national economic growth, and contributed to 1.56 percent of Indonesia is gross national product in 2016 [3]. Furthermore, footwear industry exports continue to increase, climbing to 3.3 percent in 2016 [4] and 2.1 percent in 2017 [5].

In East Java, the footwear industry is potential is quite high [6] and it has been established as one of the significant industries developed with the cluster model approach [7]. The footwear industry is a priority for East Java is industry and trade sector [8] that can be grouped into (1) large industry amounting to 33 units; (2) SMEs amounted to 675 units. Among them, SMEs had the largest numbers.

SMEs play a significant role in modern economies because of their flexibility and ability to innovate [9]. To be exposed to the global market, SMEs in developing countries in particular can either integrate into larger commodity chains directly or penetrate their traditional home markets indirectly [10]. The global market will foster the competition among the footwear industry, encouraging firms in it to increase their competitive advantage. Innovative activity is one way to improve excellence and competitiveness [11], and it has a strong association with company is success in sustaining their business performance and growth [12]. Several studies have admitted innovation as a vital aspect and as one of the guarantees for the company in enhancing its competitiveness. Prior studies on SMEs in various countries have shown a strong correlation between innovative behavior and the achievement of corporate performance (Gunasekaran et al., 2000; Romijn & Albaladejo, 2004; Siyamtinah, Sulisty, & Rahmani, 2011) [9] [13] [14].

The concept of innovation capability connects to process and product technology as well as the way that production is organized and managed [13]. It refers to the ability of the parties to generate, diffuse, and utilize innovations that have economic value [15]. Shan and Jolly (2010)[16] argued that there are various opportunities and challenges for many companies to improve their innovation through increased activity of technological innovation capability (TIC) which can subsequently be the key drivers of the increased competitiveness and economic development in the long run.

Ancona and Caldwell (1987) [17] claimed that technological innovation plays a crucial role in predicting the long-term survival of organizations (cited in Antonio, Richard, & Esther, 2010, pp. XXX) [18] and to sustain its global competitiveness (Yam et al., 2011) [15]. The improvement of TIC can be a key company is resources that benefits the firm (Guan & Ma, 2003) [19]. Various studies have identified the TIC components that are important to companies. It is recognized that a company with greater TIC can achieve higher levels of organizational performance and effectiveness. The successful technological innovation helps companies to gain market position and realize more long-term returns (Lawless & Fisher, 1990, cited in Lau et al., 2010, pp. XXX) [20]. Other studies contended that TIC is also positively related to new product introduction and innovation sales (Yam et al., 2004) [21], and it affects the

firm is profitability significantly and positively (Siyamtinah et al., 2011) [14].

II. ANALYTICAL FRAMEWORK

Burgelman, Maidique, and Wheelwright (2004)[22] defined TIC as a comprehensive set of characteristics of an organization that facilitates and supports its technological innovation strategies. TIC is a kind of particular asset or resource that includes technology, products, assets, or knowledge, experience, and organization (Guan & Ma, 2003)[19]. TIC is the skills and knowledge needed to effectively absorb, master, and improve existing technologies, and to create new ones (Lall, 1992, as cited in Lau, Yam, & Tang, 2010)[23]. Prior studies have proposed several approaches to assess a company is TIC, such as the asset approach (Christensen, 1995, as cited in Yam et al., 2011) [15], the process approach (Burgelman et al., 2004; Chiesa et al., 1996, as cited in Yam et al., 2011) [22] [15], and the functional approach (Richard C. M. Yam, Guan, Pun, & Tang, 2004) [24]. Among these approaches, the functional approach is easier to comprehend than either the asset or process approaches (Yam et al., 2011) [15].

There are seven dimensions describing TIC (Guan & Ma, 2003; Lau et al., 2010; Shan & Jolly, 2010; Yam et al., 2004; Yam et al., 2011) [19] [20] [16] [21][15]:

1) *Learning capability*: This capability illustrates the company is ability to identify, assimilate, and exploit knowledge from its environment.

2) *R&D capability*: This capability demonstrates the prudent integration of the company is research and development strategy, project implementation, project portfolio management, and the level of expenditures for research and development activities.

3) *Resource allocation capability*: This capability ensures the company is ability to provide capital adequacy, professionals, and technology investments into the innovation process.

4) *Manufacturing capability*: This capability refers to the company is aptitude to transform the results of research and development into products according to market needs.

5) *Marketing capability*: This capability identifies the company is aptness to publicize and market their products by understanding customer needs, competitive conditions, the analysis of costs and benefits, and acceptance of the innovation.

6) *Organization capability*: This capability refers to the knack of the company in securing its mechanism along with harmonizing and strengthening its culture, plus adopting good management practices and professional organizations.

7) *Strategic planning capability*: This capability describes the company is adeptness in determining and analyzing internal strengths and weaknesses and external opportunities and threats, thus developing plans that follow the company is vision and mission, and adjusting them for implementation.

In recent decades, many studies have emerged related to the development of TIC in different industries in various

countries (Shan & Jolly, 2012; Siyamtinah et al., 2011; Richard C.M. Yam, Lo, Tang, & Lau, 2010) [16] [14] [24]. However, as yet there are no empirical studies that identify innovation capabilities in the footwear industry in Indonesia as one of the biggest developing countries in the ASEAN region. This study assesses TIC among footwear industries, in particular, footwear SMEs in Wedoro, Sidoarjo, East Java.

Wedoro is a village in Sidoarjo that developed as footwear cluster since 1960 [25]. This village could improve its economic commodity by producing shoes and slippers. There are approximately 600 footwear producers and 210 outlets in Wedoro. Most of them are micro, small, and medium enterprises [26]. Their productivity is quite high with an average of 100 bags per week per producer.

Based on data from Central Bureau of Statistics (*Badan Pusat Statistik*) East Java, in January 2018 the footwear industry reached \$53 million, increasing 16.57 percent compared with the same period in 2017. Accordingly, the footwear industry contributes to 3.43 percent of exports from East Java [27]. However, because of the global market, the competition among footwear producers gets tougher. Footwear manufacturers in East Java must face competition in overseas markets, especially in Western Europe, due to the development of a more competitive footwear industry in Eastern Europe. Therefore, it is expected that based on findings from this study some solution may be suggested to enrich their innovation capabilities and to enhance their competitive advantage so that they are capable of competing in the international marketplace.

III. RESEARCH METHODOLOGY

This study used primary data collected through the distribution of questionnaires divided into two sections, namely (1) Part I contained five questions aimed at knowing the profile of the respondents i.e., production system, age of business, scale, number of employees, and product type; (2) Part II consisted of 46 questions to measure the innovative capabilities of SMEs with seven dimensions of TIC, namely learning capability (4 variables), R&D capability (14 variables), resource capability (6 variables), manufacturing capability (7 variables), marketing capability (8 variables), organizational capability (4 variables), and strategic planning capability (3 variables). The dimension of TIC used in this study refers to the functional approach because it is simple to understand and has been used in many studies recently [15].

The queries in the questionnaire are closed questions. Questions in part I were of the multiple choice variety. Statements in parts II were presented in the form of a Likert scale running from 1 to 7. The respondents were asked to give opinions on to what extent they agree with the statements regarding company is TIC by selecting a point on the continuum between “Strongly disagree” (rating 1) and “Strongly agree” (rating 7).

The sampling method used in this study was a non-probabilistic (purposive) sampling. The sample of this study was the owners of footwear SMEs in Wedoro, Sidoarjo (660 kilometers east of Jakarta). Questionnaires

were distributed to 62 respondents who consented to participate in this study. The researcher came to this village and gave the questionnaire to them directly. The data were then processed and analyzed as described in the following section.

IV. RESULTS AND DISCUSSION

This part will explain the results from the collected and processed data.

A. Validity and reliability test

Before data analysis, the validity and reliability of the data were tested to ensure that they could be analyzed further. Collected data from 62 respondents would be valid if corrected item-total correlation is greater than 0.2108 (r table for $df = 60$ with a significance level 0.05). They were reliable if Cronbach's Alpha was more than 0.6 [28]. SPSS

results for validity and reliability tests can be seen in Table 1. It means that almost all TIC variables are valid and reliable. However, variable L2 is not valid with the question of whether the level of employee education has an impact on performance. Most respondents assigned level 1 to this variable, and there would not be any change to the result if more data were collected. Therefore, this variable would remain as it was.

B. Descriptive statistics analysis

Descriptive analysis is used to explain the characteristics of footwear SMEs in Sidoarjo, with results shown in Table 2. It can be shown that the majority of footwear SMEs in Sidoarjo had as job order production system (82%), were mostly under five years old (40%), were microenterprises (48%), had less than five employees (35.5%), and all of them produced slippers.

TABLE 1. VALIDITY AND RELIABILITY TEST

Dimension	Variable	Corrected Item-Total Correlation	Cronbach's Alpha
Learning Capability (4 variables)	L1	0.363	0.605
	L2	0.000	
	L3	0.668	
	L4	0.496	
R&D capability (14 variables)	RD1	0.374	0.838
	RD2	0.377	
	RD3	0.392	
	RD4	0.350	
	RD5	0.452	
	RD6	0.274	
	RD7	0.475	
	RD8	0.316	
	RD9	0.735	
	RD10	0.510	
	RD11	0.542	
	RD12	0.704	
	RD13	0.664	
	RD14	0.613	
Resource Capability (6 variables)	R1	0.517	0.832
	R2	0.571	
	R3	0.602	
	R4	0.694	
	R5	0.713	
	R6	0.540	
Manufacturing Capability (7 variables)	M1	0.680	0.845
	M2	0.622	
	M3	0.643	
	M4	0.683	
	M5	0.600	
	M6	0.519	
	M7	0.496	
Marketing Capability (8 variables)	MR1	0.524	0.737
	MR2	0.349	
	MR3	0.628	
	MR4	0.348	
	MR5	0.488	
	MR6	0.275	
	MR7	0.456	
	MR8	0.501	
Organizational Capability (4 variables)	O1	0.521	0.741
	O2	0.679	
	O3	0.417	
	O4	0.547	
Strategy Capability (3 variables)	S1	0.605	0.736
	S2	0.599	
	S3	0.510	

TABLE II. DESCRIPTIVE ANALYSIS OF FOOTWEAR SMEs IN SIDOARJO

Variable	Results
Production system	82% using job order, 18% using a combination of job order and make to stock.
Age of business	40% less than five years, 37% between 6–10 years, 8% between 11–15 years, 6% between 16–20 years and 8% more than 21 years.
Scale (based on assets)	36% is microenterprise (< 50 million rupiahs), 48% is small enterprise (51–500 million rupiahs), and 16% is middle enterprise (500–1000 million rupiahs).
Number of employees	Less than five employees (35.5%), between 5–10 employees (29%), between 11–15 employees (16.1%), between 16–20 employees (3.2%), between 21–25 employees (8.1%), and the rest between 26–30 employees.
Product type	All (100% SMEs) produce slippers.

C. The identification of TIC

Several variables for the assessment of TIC were adopted from prior studies. Regarding the SMEs situation and condition, in particular in Indonesia, some variables referred to previous research conducted by Rianto [29]. He identified the determinant factors of innovation capability of SMEs, such as the educational background and the work experience of business owners, and labor skills (learning capability), technology efforts (manufacturing capability), the interaction with the other parties (organizational capability), and the advantage of geographical proximity (resource capability). Furthermore, based on the results of the preliminary survey and some interviews with the owners, there were also some variables that could be added to the seven dimensions of TIC. Collected data from the questionnaire distribution were calculated to get the average value (mean) of each variable using the measurement scale as follows: 1.00–3.00 (low); 3.01–5.00 (medium); 5.01–7.00 (high).

The results of TIC measurement are shown in Table 3 with the explanation as follows:

1) *Learning capability*. This dimension has an overall mean of 1.83 with the highest single-variable mean of 2.42 on work experience. Sometimes to fulfill the orders, SMEs do not consider work experience; they will employ anyone who wants to work and accepts the wages. The lowest single-variable mean of 1.00 was on the level of employees' education, suggesting that the level of the employee education does not have a big influence because most of the activities are done manually.

2) *R&D capability*. The overall mean of R&D capability is 3.53 with the highest single-variable mean of 5.35 on product innovation and the lowest single-variable mean of 1.29 on product development. Many SMEs innovate their products, even though they implement a simple innovation, such as changing the picture on the products. However, there are a limited number of SMEs that implement product development completely, such as conducting research, creating a prototype, and commercializing the product. Although some SMEs make a prototype before commercializing the product, they do it without preliminary survey or research.

3) *Resource capability*. The overall mean of resource capability is 4.81 with the highest single-variable mean of 4.94 on proximity to the services for a production process. An advantage of SMEs location is the proximity to the services provider related to the production process, such as printing and press machines. However, the variable of the proximity to the market got the lowest single-variable

mean of 4.54 because most SMEs send products to the customers that may be located far away from their factories.

4) *Manufacturing capability*. This dimension attained an overall mean of 4.71 with the highest single-variable mean of 5.26 on production capacity adjustment to customer order. It can be understood that most SMEs apply job order production so that they create the products based on orders and adjust their capacity to fulfill them. The lowest single-variable mean of 4.34 is on inability of employees to repair the tools. Indeed the employees can use the tools, but they cannot fix them and do not know how to maintain them well.

5) *Marketing capability*. The overall mean of marketing capability is 4.28 with the highest single-variable mean of 4.87 on marketing the product through the sample of a photograph of the product. Most SMEs bring their product samples directly or send their product is picture to customers. The lowest single-variable mean of 2.89 is on marketing the product through an agent. There are a limited number of SMEs that use brokers to market their products because they prefer to market them by themselves.

6) *Organizational capability*. This dimension had an overall mean of 3.46 with the highest single-variable mean of 5.16 on organization control by the group. Based on interviews with the owners, they may dedicate an employee on certain orders to achieve the target. For example, today employee A is on the gluing part, but tomorrow he can be in another part, such as press machine. The lowest single-variable mean of 1.71 is on job division. The owner may transfer the jobs to their family members occasionally. For example, if he is sick or cannot be in the office. Accordingly, they do not have a specific labor division for each production process.

7) *Strategy capability*. This dimension achieved an overall mean of 4.96 with the highest single-variable mean of 5.29 on specific strategy. Each SMEs has a specific strategy to succeed in its business, such as how to get new customers, and how to maintain old ones. Nonetheless, some SMEs do not have a target that they have to pursue because they focus on how they can obtain orders. That is why the lowest single-variable mean of 4.66 is on target.

In general, there are five variables that get the highest single-variable mean, i.e., SME innovates products (5.34), SME undertakes a specific strategy (5.29), the production capacity is adjusted to the customer's order (5.26), organization control on SME is carried out by the group (5.16), and SME issues a new product within one month

with an average of 5 – 10 types (5.15). There are also five variables that received the lowest single-variable mean, such as the level of employee education has an impact on the performance (1), SME does product development (1.29), SME registers a patent for the product (1.37), SME develops product due to market demand to follow the current trend (1.4), and the developed product is better or modifies an existing one (1.45).

From those results, it can be concluded that overall TIC of footwear SMEs in Sidoarjo is in the medium category, with the highest overall mean on the strategic planning capability (4.96); and the lowest is on the learning capability (1.83). Although SMEs produce footwear in Sidoarjo, in particular in Wedoro, they are still

small- and medium-sized, already have a target, and conduct a specific strategy. However, based on interviews with some owners, their target still focuses on the product sales and their strategy refers to how to increase them. The learning capability has the lowest overall mean because most of the production activities do not require an adequate education and sufficient work experience. As long as the employee shows willingness to work, is diligent, and is persistent, he can do his job well. They also conduct the job assessment because they pay wages based on the work output of the employees. These results support the statements that SMEs are usually run by members of local communities, creating goods that satisfy the needs of local people and improve local incomes, employment, and entrepreneurship [10].

TABLE III. SINGLE-VARIABLE MEAN AND OVERALL MEAN OF TIC DIMENSIONS AND VARIABLES OF SMEs FOOTWEAR IN SIDOARJO

Dimension	Variable	Indicator Code	Mean	Grand Mean
Learning capability (TIC1)	The level of employee understanding has an impact on performance.	L1	1.55	1.83 (Low)
	The level of employee education has an impact on performance.	L2	1.00	
	The age of the employee has an impact on performance.	L3	2.35	
	The working experience affects performance.	L4	2.42	
R&D capability (TIC2)	The company does process innovation.	RD1	5.11	3.53 (Medium)
	The process innovation was done by adding new tools or machinery to assist the production process.	RD2	5.15	
	The company innovates products.	RD3	5.34	
	The company has diverse designs and models of products.	RD4	5.05	
	The product design is adjusted to the customer's order.	RD5	5.11	
	The company creates a new product in less than or equal to one month with an average of 5–10 types.	RD6	5.15	
	The advantage of a company is that its products is better-quality than its competitors.	RD7	4.87	
	The advantage of a company is seen when its product's design matches the current trend.	RD8	5.00	
	The company does product development.	RD9	1.29	
	The developed product is a better product or modifies an existing product.	RD10	1.45	
R&D capability (TIC2)	The company registers a patent for the product.	RD11	1.37	3.53 (Medium)
	The company develops product due to market demand to follow the current trend.	RD12	1.40	
	The company develops a product to increase profit.	RD13	1.71	
	There is an additional cost to develop a product.	RD14	1.48	
Resource capability (TIC3)	Ideas of product design come from other parties (rather than the owner of the company).	R1	4.90	4.81 (Medium)
	The current location of the company provides some advantages.	R2	4.76	
	The company's location is advantageous, being near to services required for the production process, such as printing services.	R3	4.94	
Resource capability (TIC3)	The company's location is advantageous, being near to the marketing agent/distributor.	R4	4.76	4.81 (Medium)
	The company's location is advantageous, being near to the market.	R5	4.58	
	The company has sufficient workforce for the production process.	R6	4.94	
Manu- facturing capability (TIC4)	The company has a product variety less than ten types.	M1	4.76	4.71 (Medium)
	The production capacity is adjusted to customer order.	M2	5.26	
	Current tools or machinery are sufficient for the production process.	M3	4.44	
	The availability of tools is adequate.	M4	4.65	
	The company wants to add to the number or type of tools.	M5	4.58	
	Additional tools can increase the capacity of the company.	M6	4.94	
	Employees can only use the tools, but they cannot repair them.	M7	4.34	
Marketing capability (TIC5)	The company currently markets its products to customers directly by bringing a sample or photo of the product.	MR1	4.87	4.28 (Medium)
	The company markets its products through an agent.	MR2	2.89	
	The company knows the market demand by doing a market survey.	MR3	3.97	
	The company's products can fulfill orders sufficiently.	MR4	4.27	
	The company does product promotion.	MR5	4.63	
	The company maintains customer loyalty by maintaining product quality.	MR6	4.24	
	Product delivery is carried out through expedition or other shipping services.	MR7	4.82	
	Product delivery time has an impact on customer's loyalty.	MR8	4.56	
Organi- zational capability (TIC6)	Organization control of the company is carried out by the group.	O1	5.16	3.46 (Medium)
	The company discusses matters with other companies.	O2	2.10	
	The company cooperates with other parties.	O3	4.85	
	The company has a clear division of labor.	O4	1.71	
Strategic planning capability (TIC7)	The company has a target.	S1	4.66	4.96 (Medium)
	The company does a specific strategy (e.g., marketing, finance, etc.).	S2	5.29	
	The company undertakes job assessment.	S3	4.94	

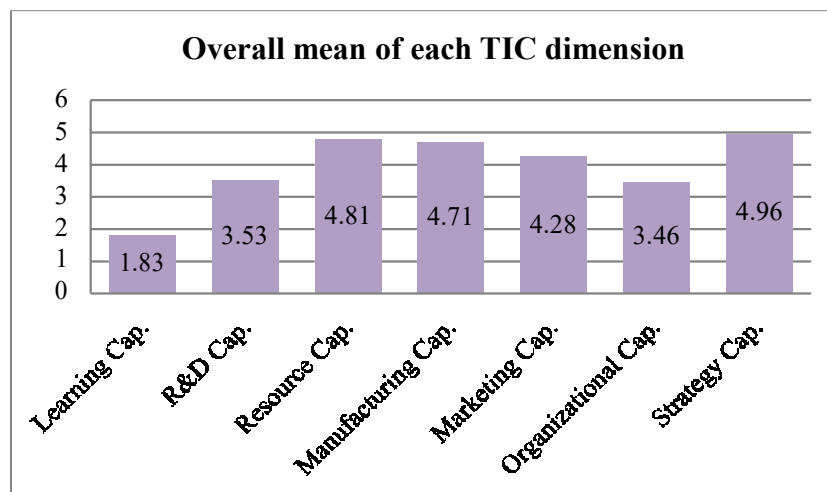


Fig. 1. Overall mean of each TIC dimension

In this study, the company scale does not impact TIC because most of them (84%) are micro and small businesses. There are also no differences in TIC based on the age of the company or the product type [30].

The findings in this study are different from the results of prior studies. Among 200 manufacturing companies in the Hong Kong or Pearl River Delta region, the dimension of TIC that got the highest single-variable mean was learning capability and marketing capability, while the lowest single-variable mean was on R&D capability [15] [23]. A study of 213 Chinese companies demonstrated that manufacturing capability obtained the highest single-variable mean [19]. Another study among Chinese companies showed that strategic planning and marketing capabilities achieved the highest single-variable mean [21]. Among SMEs footwear, TIC performance of SMEs in Mojokerto (636 kilometers east of Jakarta) demonstrated the high category with the highest overall mean on strategic capability and learning capability [31]. However, for SMEs in Surabaya (665 kilometers east of Jakarta), the highest overall mean were on R&D capability and strategic capability [30]. Another study by Karagouni and Papadopoulos [31] showed that among SMEs furniture in Greece the highest TIC performance was on marketing capability and organizing capability.

Those different findings support the argument that although technological innovation is imperative for the competitiveness of all types of manufacturing industries, its implementation is distinctive based on the variation in the degree and pace of utilization of technologies in different industry sectors [20].

D. Suggestions

Based on the identification of TIC performance among SMEs producing footwear in Wedoro, Sidoarjo, several suggestions to improve it are as follows: (based on the overall mean of each TIC dimension, and single-variable means, ranked from lowest to highest)

1) *Learning capability.* Although education level does not impact employees' performance, their skills can be improved through informal education, such as training, workshops, and seminars because training methods can be

a crucial means of increasing employee skills[14]. Those activities could be arranged by the city or provincial government, or with assistance from universities or related institutions. The skilled employee would increase the productivity that would in turn give an advantage to the company. By augmenting learning capabilities, the owner should be willing to enhance their knowledge, in management and business strategies in particular, by reading books, browsing the internet, and sharing information with other owners. They also can facilitate cooperation with related institutions and universities to garner new insights into small and medium business and how to improve them.

2) *Organizational capability.* Working with other SMEs would allow them to foment further cooperation. Related institutions, such as banks, government institutions, and private companies, would appreciate and prefer to assist in cooperating them rather than some individual. To increase productivity, they should define a clear division of labor based on the capabilities and the competence of the employee.

3) *R&D capability.* At this time SME owners have carried out R&D activities indirectly, such as investigating trend models, looking for information of the needed product in the market, and sharing with other SMEs to gather information about market conditions, product design, etc. However, to optimize these activities, they can develop a specific division of R&D that will focus on the research and product development so that what they produce matches what the market demands.

4) *Marketing capability.* Currently, SMEs bring their products directly to consumers or send them pictures of their products. By optimizing technological development, they could use their mobile phones, create online marketing, or utilize social media to enhance their marketing. Those methods will save money, time and energy because they can be carried out fast, anytime, and anywhere. They can also use the internet to browse the current trends or preferred models of footwear so that they can create more fascinating products. By applying those methods, they can expand their market, not only within Surabaya and Java but also beyond Java, even overseas.

5) *Manufacturing capability*. Currently, SMEs footwear in Sidoarjo run their production based on customer orders (job order). They match their capacity to the orders they get by maximizing their tools. Sometimes, they refuse orders because they have limited production capacity. However, they are reluctant to add a machine or to apply an automation tool because it would decrease work opportunities and reduce the need for some employees' services. Therefore, the most suitable devices for them are semi-automation tools or machines which allow them to speed up the production process, even though they still need employees to operate them. Another advantage is they can also reduce human error and produce better-quality products. But employees should be trained on how to use them and how to fix them if there is damage.

6) *Resource capability*. Because most transportation is carried out via roads, it seems that highways need improvement. If they are in fine condition, SMEs can move their goods, either raw materials or finished products, fast and easily, so that they can fulfill the orders on time.

7) *Strategy capability*. For this time being, job assessment was based on the working quantity and the working process. Some measurements could be added for job assessment, such as the discipline of the employees (e.g., whether they arrive late or not), teamwork (e.g., how they cooperate with other employees to fulfill orders), and competence (e.g., how they complete their jobs).

V. CONCLUSION

Based on the conducted research and from the results of analysis, it can be concluded that the footwear cluster in Wedoro, Sidoarjo produces slippers, using a job order production system (82%), wherein the majority of firms are micro and small-scale operators (84%), are under five years old (40%), and the number of employees is typically less than five.

Several improvement strategies may be suggested to enhance dimensions of TIC. For R&D capability, continuous innovation can be created by seeking references from various print and electronic media, doing discussions and sharing with other SMEs to gather more information about the market's condition and product's design. For resource capabilities, the training of workers and SME owners should be conducted, and infrastructure (e.g., road condition) should be renovated to ease transportation to and from the location. For marketing capabilities, they can use the internet or online marketing to garner ideas for new design or models and to obtain information to expand marketing areas.

The results of the study, in particular, the proposed action-plan improvements, can be carried out to improve their performance and to create a competitive advantage in footwear SMEs in Sidoarjo. Those suggestions can also be taken as productive feedback for the government to provide adequate support and assistance as required by the footwear SMEs in Sidoarjo, especially in Wedoro.

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