Mapping the Causative Factors that threaten the SMEs to Survive during COVID-19 Pandemic: An Interpretive Structural Modeling Approach

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Abstract. This research aimed to investigate the underlying causative factors that threaten SMEs of wooden-based furniture to survive during the COVID-19 pandemic. After the content validation process, this research identified 15 causative factors; 14 out 15 causative factors were based on literature review, one out 15 causative factors were based on the suggestion of a panel of experts. The result of data processing with ISM methodology indicated two very significant causative factors, namely limitations on freedom of movement from the government and the unexpected change of rules (i.e., regulation and laws) on the enterprise or on the market in which the SMEs operate.

Keywords: causative factors, COVID-19, Interpretive Structural Modelling, SMEs wooden-based furniture

1. Introduction

Indonesia is a large entrepreneurial country. Between 2014 and 2016, the number of SMEs exceeded 57.9 million units, and the number is likely to exceed 59 million units in 2017 [1]. Currently, the Statistical Center Bureau reports that Indonesia has 64 million SMEs, accounting for 99.9 percent of all enterprises in the country [2]. In Indonesia, SMEs contributed considerably to the 96.92 percent of employment created, but had a lesser impact on GDP (60.51 percent), investment (60.03 percent), and export (15.65 percent) [3]. Additionally, the importance of SMEs in Indonesia's economic growth history has aided in containing the volatility of the 1998 crisis. In 1998, SMEs emerged as the economic saviours of Indonesia. When several huge enterprises and banks failed, exports of SMEs rose by 350%. [2]. Their resiliency was largely a result of their small-scale manufacturing assets and manual manufacturing practices. Additionally, SMEs were less reliant on third-party (mostly foreign) capital to continue operating and were less influenced by currency and exchange rate crises.

In contrast to the crisis of 1998, the majority of research revealed that SMEs struggled to survive the COVID-19 pandemic. The COVID-19 pandemic threatens the existence of SMEs globally and domestically [4], notably in Indonesia, particularly during the implementation of social distancing policies. Numerous research on the state of Indonesian SMEs during COVID-19 may be described as follows.

- Reference [5] surveyed 587 randomly chosen SME samples. On the demand side, the results revealed that most SMEs were struggling to survive due to decreasing demand and revenue, and some even had no income due to the social distancing strategy implemented during COVID-19. Furthermore, the social distancing strategy implemented during COVID-19 increased raw material and manufacturing costs owing to supply chain issues. Finally, the effect of such policies prompted SMEs to be concerned about their ability to survive.

- Reference [6] also used a questionnaire to gather data on the state of Micro Enterprises and SMEs in 17 Indonesian provinces during COVID-19. On the demand side, the findings revealed that most SMEs struggled during COVID-19 since their income plummeted during the second month of the pandemic and they faced financial and non-financial challenges. Furthermore, government provisions and assistance are usually seen as ineffective in mitigating the pandemic's impact since program distribution was hampered by either mistargeting or a lack of knowledge on application criteria, processes, and registration location.

- On the basis of 1,332 complaints against SMEs in 18 provinces, the Ministry of State for Cooperatives and Micro, Small and Medium Enterprises discovered that small and medium-sized enterprises (SMEs) were experiencing difficulties on both the demand and supply sides. Around 917 SMEs (69 percent) were experiencing difficulties as a result of a decrease in sales turnover, approximately 119 SMEs (9 percent) were experiencing difficulties in distributing manufactured goods, approximately 179 SMEs (13 percent) were experiencing difficulties in accessing business capital, and approximately 50 SMEs (4 percent) that have experienced a drastic reduction in production that has caused production to be halted for a short period of time Although not yet representative of the entire circumstances of SMEs in Indonesia, the condition of SMEs distributed throughout 18 provinces may serve as a representative sample of the overall conditions that SMEs in Indonesia are under significant pressure as a result of the epidemic [1].

- Based on the results of an online survey of over a hundred targeted SMEs, in the demand side, the United Nations Industrial Development Organization (UNIDO) reported that SMEs were having difficulty surviving during COVID-19 because at least half of the employees were unable to come to work due to government restrictions. The SMEs were also having difficulty in their cash flow because they had difficulty processing and finalizing customer orders. On the supply side, the disruption of value chains and logistics made the SMEs reduce their operations. A further difficulty for SMEs was their failure to meet the terms of their contract employment with other companies. According to the study, most respondents (81%) foresee a year-over-year revenue drop of more than 50%, resulting in significant cash constraints and an increased chance of employee reductions [7]

So, it can be found that regardless of the COVID-19 made, the SMEs were having difficulty surviving; the causative factors have been identified in most previous research. However, they have seldom systematically focused on the interactive relationships between these causative factors. It will be difficult for government institutions to determine which causative factors are more important. For this reason, this study aims to use interpretive structural modeling (ISM) to find out the inherent connection and hierarchical structure between those causative factors that make the SMEs have difficulty during COVID-19. ISM is a suitable method for finding out fundamental caused and directly causative factors. Further, the hierarchical model indicates the dynamic process of causative factors. On this basis, this paper aims to uncover the dynamic mechanism of caused factor that makes SMEs are having difficulty during COVID-19 or threaten the SMEs to survive during COVID-19 by clarifying the interaction between supply and demand factors with the ISM method.

2. Literature Review

2.1. Definition of SMEs

In Indonesia, SMEs are defined legally by Law No. 20 of 2008 on Small and Medium-Sized Enterprises [8]. SMEs are defined as productive entities owned by a single person or business unit, excluding foreign-owned or foreign-invested firms, and are defined by their assets (excluding land and buildings) and yearly sales, as indicated in Table 1

Table 1: Definition of SMEs according to Law No 20/2008

Enterprise Size	Asset value in IDR (excluding land and buildings) or total yearly sales	Approx. Value USD March 2016
Micro	Less than 50 million in assets or less than 300 million in sales	Less than 3,740 in assets or less than 22,400 in sales
Small	50 to 500 million in assets or 300 million to 2.5 billion in sales	3,740 to 37,400 in assets or 22,440 to 187,000 in sales
Medium	500 million to 10 billion in assets or 2.5 to 50 billion in sales	37,400 to 747,999 in assets or 187,000 to 3.74 million in sales

2.2. A causative factors and COVID-19 pandemic

Based on the result of research from previous authors [1]. [5]-[7], [9]-[15], this study chooses 21 causative factors that make the SMEs had difficulty surviving during the COVID-19 pandemic. In summary, a list of 21 factors can be seen as follow

- Difficulty in making coordination with supplier (CF1)
- Reduced labor productivity since the employee cannot commute to work for safety reasons (CF2)
- Increased the number of COVID-19 cases in the geographical area of the enterprise operations (CF3)
- Impacted of economic activity by COVID-19 in the market in which the SMEs operate or SMEs expect to operate (CF4)
- Workers' obligation to carry out self-checking to identify hazards that could lead to the spread of COVID-19; for example, conducting regular health and safety checks (regular antigen test) (CF5)
- Difficulty to get the required machinery and equipment from the supplier as well as the difficulty to get support services that the enterprise needs to maintain significant equipment and machinery (CF6)
- Difficulty to get raw material due to shipping delay (CF7)
- Supplier disruption because they were running out of their inventory (CF8)
- Suppliers were unable to provide services and had difficulty getting the new supplier (CF9)
- Increased government restrictive policies (e.g., increased health screening) that caused delays in shipping the SMEs products to their customer (CF10)
- Decreased demand (CF11)
- Increased the costs related to public utilities (electricity, water, etc.) (CF12)
- Increased risk of a criminal activity that leads to your enterprise as a consequence of the depressed economic activity (CF13)
- High dependency on foreign suppliers for most of the raw material and main inputs required for SMEs to operate (CF14)
- Difficulty in working together with the other companies to share health and safety practices/equipment (CF15)
- Unexpected change of rules (i.e., regulation and laws) on the enterprise or on the market in which the SMEs operate (CF16)
- Delayed in shipment and distributed product requested by the customer (CF17)
- Increased the costs of using public infrastructure on the enterprise or on the market in which the SMEs operate (CF18)
- The State of Emergency" or limitations on freedom of movement from the government (CF19)
- Limited government's subsidies on the enterprise and workers during the COVID-19 pandemic (CF20)
- Difficulty to get appropriate vehicles used for business (e.g., the vehicle for staff movement, the vehicle for product delivery, etc.) with sanitizers and processes for regular cleaning 5Method of Research (CF21)

3. Research Method

3.1. Object of the research

This study uses SMEs in the wooden based-furniture industry as the research object, especially the SMEs of wooden based-furniture located in Central Java Province. In Indonesia, the furniture industry is dominated by SMEs, accounting for around 95% of total output. Millions of people in Java rely on this sector and its supply lines for their livelihoods [16]. According to the Indonesian Furniture and Handicraft Association (AMKRI), Indonesia's furniture sector employs around 500 thousand direct people and 2.5 million indirect workers [17]. Additionally, AMKRI [17] predicted that every USD 1 billion increase in furniture exports might create 400-500 thousand employments. Then, according to the Ministry of Industry, furniture exports were USD 1.95 billion in 2019 [18]. Several provinces in Indonesia, including DKI Jakarta, Central Java, South Java, North Sumatera, and Riau, create wooden furniture for the foreign market. Specific industrial hubs have sprung up, most notably in Jepara District (Central Java), followed by Semarang City (Central Java), Solo City (Central Java), and Surabaya City (East Java). Furniture has been the unique product in Jepara, drawing researchers owing to its outstanding export success. In 2011, Jepara had at least 11,981 business units consisting of workshops, showrooms, and warehouses [19] [20]. Similar to the problem faced by the others, SMEs in the wood-based furniture industry is also confronted with a reduction in worldwide demand, order cancellations, customer bankruptcy resulting in their inability to pay, and so on [21].

3.2. Data collecting procedure

In this study, for filling out the validity questionnaire, the panel of experts who are respondents of this research consists of representatives from Central Java Industry Office (2 experts), the representative from Indonesian Furniture and Craft Industry Association (Himpunan Industri Mebel dan Kerajinan Indonesia-HIMKI) Semarang Raya (2 experts), and five owners of SMEs furniture (UD Permata Furni Exportir, CV. Kina Citratama, UD. Hasibuan Design, CV. Dua Musim, and UD. Radiant Suryatama). Then, for filling out the ISM questionnaire, the panel of experts consists of all the experts who filled the validity questionnaire plus one additional expert from HIMKI Semarang Raya, three experts from HMKI Solo, and two experts HIMKI Jepara. Nine experts filed out the validity questionnaire, and fifteen filed out the ISM questionnaire. All experts were asked to fulfil. the questionnaire through the online system. Before filling out the questionnaire, they were given a brief explanation over the phone and then, the address of the online questionnaire was submitted via email or WhatsApp

3.3. Data processing procedure

Among numerous ways for determining content validity, this research use empirical methodologies to generate the content validity index (CVI) [22]. Then, CVI is calculated in this research using Item-CVI (I-CVI). Because the relevance of each causing factor as a threat to the survival of SMEs is quantified on a four-point Likert scale (1 = not relevant, 2 = somewhat relevant, 3 = relevant, 4 = very relevant), the I-CVI is calculated as the number of experts rating each item or factor as "relevant" or "very relevant" (rating it 3 or 4), divided by the total number of experts. I-CVI values vary from 0 to 1; an item or factor may be considered important if its I-CVI value exceeds a threshold value determined by the number of respondents. For instance, the acceptable I-CVI value for two experts is at least 0.8 [23]. Acceptable I CVI values for three to five experts and at least six experts should be one and at least 0.83, respectively [24]. Then, for six to eight experts and at least nine experts, the I-CVI value is at least 0.83 for six to eight experts and 0.78 for at least nine experts, respectively [25] (Lynn, 1986).

The second data processing technique is the Interpretive Structural Modelling (ISM). The ISM method can be described in the following steps [26]

1). Conduct a literature review to identify a relevant causative factor as a threaten for SMEs to survive during COVID-19 pandemic

2). Develop a pairwise questionnaire to create the correlation among each caused factor recognized in Step 1. In this case, the panel of experts as the respondents of this research are asked to describe the correlation between caused factor "i" and "j" using four symbols: V (caused factor i will help achieve caused factor j); A (caused factor j will help achieve caused factor i); X (caused factor i and j will help achieve each other); O (causative factors i and j are unrelated). Then, depending on the respondent's response, a Structural Self-Interaction Matrix (SSIM) may be created.

3). Create a reachability matrix using the SSIM data. In this stage, SSIM is changed to the initial reachability matrix by replacing the four symbols (V, A, X, or O) in SSIM with 1 or 0. The transitivity of the matrix is then validated to provide the final reachability matrix. Transitivity evaluates the rationality of the causal link between two variables.

4). Divide the matrix of reachability into several levels (reachability, antecedent and intersection).

5). Using the reachability matrix and the various levels produced in Step 4, create an ISM digraph.

6). Draw Matrice d'Impacts Croises-Multiplication Appliqúe (MICMAC)

4. Result and Discussion

4.1. Result of content validity analysis

The result of the content validity analysis is shown in Table 2. The result indicated that seven causative factors have an I-CVI value of less than 0,78 (the threshold value is 0.78 since this research uses nine experts). These causative factors should be excluded from the list and not used in the ISM method data processing. Then, to accommodate the panel of experts' suggestion, this study added one caused factor which modified of caused factor "Increased disruptions caused by the high case on COVID-19 pandemic on your

customers and their capability to purchase your products or services (CF22)" for the demand side of caused factor CF10 ("Increased government restrictive policies (e.g., increased health screening) that caused delays in shipping the SMEs products to their customer." Finally, based on the I-CVI value as well as the panel of expert's suggestion, this research uses 15 items as causative factors that make the SMEs have difficulty or threaten the SMEs to survive during the COVID-19 pandemic: CF2, CF4, CF7, CF8, CF9, C10, CF11, CF12, CF14, CF16, CF17, CF18, CF19, CF21, and CF 22 (additional causative factor).

Table 2: Result of Content Validity

No	Caused factors as a threaten for SMEs to survive during COVID-19 pandemic	Expert-									The number of experts giving a rating of "relevant" or "very relevant"	I-CVI
		I	II	III	IV	V	VI	VII	VIII	XI		
1	CF1	1	1	0	1	0	1	0	0	0	4	0,44
2	CF2	1	1	1	0	0	1	1	1	1	7	0,78
3	CF3	1	1	1	1	0	1	0	0	1	6	0,67
4	CF4	1	1	0	1	1	1	1	1	0	7	0,78
5	CF5	1	1	0	1	1	1	0	1	0	6	0,67
6	CF6	1	0	1	0	0	1	0	0	1	4	0,44
7	CF7	1	1	1	1	1	1	1	1	1	9	1,00
8	CF8	1	1	1	1	1	1	1	1	1	9	1,00
9	CF9	1	1	1	1	1	1	1	1	1	9	1,00
10	CF10	1	1	1	1	1	1	1	1	1	9	1,00
11	CF11	1	1	1	1	1	1	1	1	1	9	1,00
12	CF12	1	1	1	1	1	1	1	1	1	9	1,00
13	CF13	1	1	0	1	0	1	0	0	0	4	0,44
14	CF14	1	1	1	1	1	1	1	1	1	9	1,00
15	CF15	1	0	0	1	0	1	0	1	0	4	0,44
16	CF16	1	1	0	0	1	1	1	1	1	7	0,78
17	CF17	1	1	1	1	1	1	0	1	1	8	0,89
18	CF18	1	1	1	0	1	1	1	0	1	7	0,78
19	CF19	1	1	1	0	1	1	1	1	1	8	0,89
20	CF20	1	1	0	0	0	1	0	0	1	4	0,44
21	CF21	1	1	1	1	1	1	1	1	1	9	1,00

4.2. Result of data processing with ISM approach

Based on the answer to the questionnaire by expert one until nine, the Structural Self-Interaction Matrix (SSIM) was constructed for each expert. Then, the initial reachability matrix from each expert is developed by transforming the information of each cell of SSIM into binary digits (i.e., ones or zeros). In this case, if the cell contains symbol V, entry value 1 in cell (i,j) and entry value 0 in cell (j,i). If the cell contain symbol A, entry value 0 in cell (i,j) and entry value 1 in cell (j,i). If the cell contain symbol X, entry value 1 in both cell (i,j) and (j,i). If the cell contains symbol O, entry value 0 for in both cells (i, j) and (j, i). After generating the initial reachability matrix from each expert, the next step is developing a combined initial reachability matrix based on the majority judgment on the paired comparison between the causative factors. According to references [27] and [28], the process of aggregating the value based on the majority judgment can be done if the consensus is challenging to achieve. For example, supposed symbol V is denoted for the relationship between CF1 and CF4 in SSIM by expert 1 (only one expert), symbol O is denoted for CF1 and CF4 by expert 2, expert 3, and expert 4 (three experts), and symbol A is denoted by expert 5, expert 6, expert 7, expert 8, and expert 9 (5 experts). Based on this condition, symbol A is denoted for CF1 and CF4 since it's a majority judgment on the pairwise comparison.

Table 3 shows the combined initial reachability matrix. Table 4 shows the final reachability matrix after including transitivity into the combined starting reachability matrix. The causative factor I should be connected to the causative factor k if causative factor j is related to causative factor k. The transitivity is marked by*. Following the creation of the combined final reachability matrix, the level partitioning process begins. The final reachability matrix, according to Warfield (1974), contains the reachability set and the antecedent set for each factor. The reachability set consists of the caused factor itself and the other causative factors, which it may reach. Whereas, the antecedent set consists of the caused factor itself and the other caused factor, which may reach it. In the ISM hierarchy, the caused factor for which the reachability and intersection sets are equivalent is assigned the top-level factor, which would not assist attain any other caused factor beyond their own level. Following the discovery of the top-level factor, it is removed from the

list of remaining causative factors. Table 5 displays the 15 causative factors, as well as their reachability set, antecedent set, intersection set, and levels. Four cycles are required to finish the level partitioning. The final model of ISM based on the level of partitioning is given in Fig 1.

Table 3: Initial Reachability Matrix

		CF2	CF4	CF7	CF8	CF9	CF10	CF11	CF12	CF14	CF16	CF17	CF18	CF19	CF21	CF22
	No.	2j	4j	7j	8j	9j	10j	11j	12j	14j	16j	17j	18j	19j	21j	22j
CF2	2i	1	0	0	0	0	1	0	0	0	0	1	0	0	1	0
CF4	4i	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0
CF7	7i	1	0	1	1	0	0	0	0	1	1	1	0	0	0	0
CF8	8i	0	0	1	1	1	0	0	1	1	1	0	0	1	0	1
CF9	9i	0	0	0	0	1	1	0	1	0	1	0	1	1	0	1
CF10	10i	0	0	0	0	1	1	1	1	0	1	1	0	0	0	0
CF11	11i	1	0	0	0	0	1	1	0	0	1	0	0	0	1	0
CF12	12i	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0
CF14	14i	0	1	1	1	1	0	0	0	1	1	0	0	0	1	0
CF16	16i	1	0	1	0	1	1	1	1	0	1	0	0	0	1	1
CF17	17i	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1
CF18	18i	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0
CF19	19i	1	1	1	1	1	0	0	0	0	1	0	1	0	1	1
CF21	21i	0	1	0	0	0	1	0	0	1	1	0	0	0	1	1
CF22	22i	1	0	0	1	1	0	0	0	1	1	0	0	0	1	1

Table 4: Final Reachability Matrix

		CF2	CF4	CF7	CF8	CF9	CF10	CF11	CF12	CF14	CF16	CF17	CF18	CF19	CF21	CF22
	No.	2j	4j	7j	8j	9j	10j	11j	12j	14j	16j	17j	18j	19j	21j	22j
CF2	2I	1	1*	0	0	1*	1	1*	1*	1	1*	0	1*	1	1*	1*
CF4	4i	1	1	1*	1*	1*	1*	1*	1	1*	1	0	1	1*	1*	1*
CF7	7i	1	1*	1	1	1	1	1*	1	1	1	1*	1*	1*	1*	1*
CF8	8i	1*	1*	1	1	1	1	1	1	1	1	1*	1	1	1*	1	1*
CF9	9i	1*	0	1	1*	1	1	1	1	1*	1*	1*	1	1	1*	1*
CF10	10i	1	0	1*	1*	1	1	1	1*	1	1	1*	1*	1*	1*	1
CF11	11i	1*	1*	1	1	1*	1*	1	1	1	1*	1*	1*	1*	1*	1*
CF12	12i	1*	1	1	1	1	1	1*	1	1	1	1*	1*	1*	1	1*
CF14	14i	1*	1*	1*	1*	1	1	1	1	1	1	1*	1*	1	1	1
CF16	16i	1	1*	1	1	1	1	1	1	1	1*	1*	1	1	1	1
CF17	17i	1*	1*	1	1	1*	1*	1*	1	1*	0	1	1*	0	1*	0
CF18	18i	1	1*	0	1*	1	1*	1*	1	1*	1	1*	1	1	1	1*
CF19	19i	1*	1	1*	1*	1	1*	1*	1	1	1*	1*	1	1	1	1
CF21	21i	1	1*	1*	1	1	1*	1*	1	1	1*	1*	1*	1	1	1*
CF22	22i	1	1*	0	0	1*	1	1*	1*	1	1*	0	1*	1	1*	1

Table 5: Reachability Set, Antecedent Set, Intersection Set

Causative Factor	Reachability set	Antecedent set	Intersection set	Level
2	2i,4i,9i,10i,11i,12i,14i,16i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 17j, 18j, 19j, 21j, 22j	2ij, 4ij, 9ij, 10ij, 11ij, 12ij, 14ij, 16ij, 18ij, 19ij, 21ij, 22ij	I
9	2i,7i,8i,9i,10i,11i,12i,14i,16i,17i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 17j, 18j, 19j, 21j, 22j	2ij,7ij, 8ij, 9ij, 10ij, 11ij,12ij, 14ij, 16ij, 17ij, 18ij, 19ij, 21ij, 22ij	I
10	2i,7i,8i,9i,10i,11i,12i,14i,16i,17i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 17j, 18j, 19j, 21j, 22j	2ij,7ij, 8ij, 9ij, 10ij, 11ij,12ij, 14ij, 16ij, 17ij, 18ij, 19ij, 21ij, 22ij	I
11	2i,4i,7i,8i,9i,10i,11i,12i,14i,16i,17i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 17j, 18j, 19j, 21j, 22j	2ij, 4ij, 7ij, 8ij, 9ij, 10ij, 11ij, 12ij, 14ij, 16ij, 17ij,18ij, 19ij, 21ij, 22ij	I
12	2i,4i,7i,8i,9i,10i,11i,12i,14i,16i,17i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 17j, 18j, 19j, 21j, 22j	2ij, 4ij, 7ij, 8ij, 9ij, 10ij, 11ij, 12ij, 14ij, 16ij, 17ij, 18ij, 19ij, 21ij, 22ij	I
14	2i,4i,7i,8i,9i,10i,11i,12i,14i,16i,17i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 17j, 18j, 19j, 21j, 22j	2ij, 4ij, 7ij, 8ij, 9ij, 10ij, 11ij, 12ij, 14ij, 16ij, 17ij, 18ij, 19ij, 21ij, 22ij	I
18	2i,4i,7i,8i,9i,10i,11i,12i,14i,16i,17i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 17j, 18j, 19j, 21j, 22j	2ij, 4ij, 7ij, 8ij, 9ij, 10ij, 11ij, 12ij, 14ij, 16ij, 17ij, 18ij, 19ij, 21ij, 22ij	I
21	2i,4i,7i,8i,9i,10i,11i,12i,14i,16i,17i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 17j, 18j, 19j, 21j, 22j	2ij, 4ij, 7ij, 8ij, 9ij, 10ij, 11ij, 12ij, 14ij, 16ij, 17ij,18ij, 19ij, 21ij, 22ij	I
22	2i,4i,9i,10i,11i,12i,14i,16i,18i,19i,21i,22i	2j, 4j, 7j, 8j, 9j, 10j, 11j, 12j, 14j, 16j, 18j 19j, 21j, 22j	2ij, 4ij,9ij, 10ij, 11ij, 12ij, 14ij, 16ij, 18ij, 19ij, 21ij, 22ij	I
4	4i,7i,8i,16i,19i	4i,7i,8i,16i,17i,19i	4ij, 7ij, 8ij, 16ij, 19ij	II
7	4i,7i,8i,16i,17i,19i	4i,7i,8i,16i,17i,19i	4ij, 7ij, 8ij, 16ij, 17ij, 19ij	II
8	4i,7i,8i,16i,17i,19i	4i,7i,8i,16i,17i,19i	4ij, 7ij, 8ij, 16ij, 17ij, 19ij	II
17	17i	16i,17i,19i	17ij	III
16	16i,19i	16i,19i	16ij,19ij	IV
19	16i,19i	16i,19i	16ij, 19ij	IV

From Fig. 1, it can be seen that the "State of Emergency" or limitations on freedom of movement from the government (CF19) and the unexpected change of rules (i.e., regulation and laws) on the enterprise or on the market in which the SMEs operate (CF16) (level IV) are very significant causative factors that threaten the SMEs of wooden based-furniture to survive during COVID-19 since as it forms the base of ISM digraph. In this case, both of the causative factors (CF19 and CF16) influence delayed in shipment and distributed product requested by the customer (CF17) (level III), and then, the delay in shipment and distributed product influences the economic activity in the market in which the SMEs of wooden based-furniture operate or expect to operate (CF4), the difficulty to get raw material (CF7), and the supplier disruption because they were running out of their inventory (CF8) (level II) Moreover, the delayed shipment and distributed product, the difficulty of getting raw material, and supplier disruption influence the remaining causative factors (level I).

The next stage is to use Matrice d'Impacts Croises-Multiplication Applique (MICMAC) analysis to categorize the causal elements into four quadrants. MICMAC analysis is an indirect classification approach based on each the value of driving power and dependence of each causative factor. The result of mapping the

dependence and driving power of each causative factor in Fig. 2 indicated that all factors fall in linkage barriers (Quadrant III). This condition indicated that all caused factors have strong dependence and strong driving power. All of causative factors are unstable because any action on them will affect other causative factor and also feedback on themselves. Its mean, all the causative factors look like a chain that affects each other
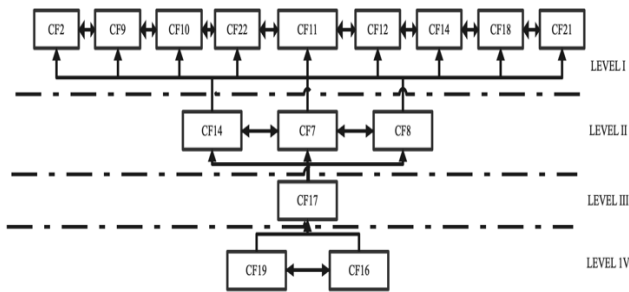

Fig 1. ISM Digraph for causative factor that threaten the SMEs of wooden based-furniture to survive during COVID-19
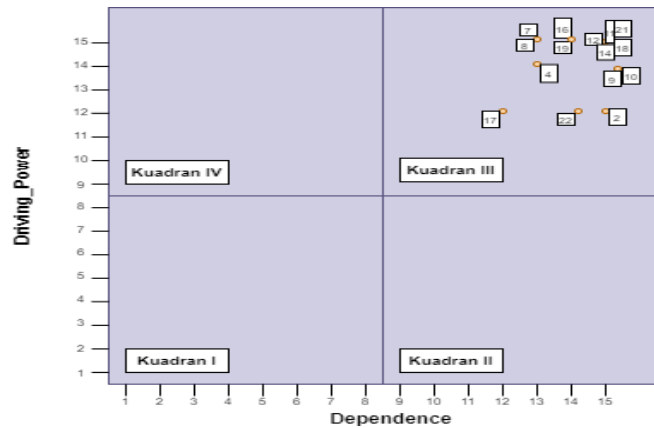
Fig 2. MICMAC analysis for causative factors that threaten the SMEs of wooden based-furniture to survive during COVID-19

5. Conclusion

This research aimed to investigate the underlying causative factors that threaten SMEs wooden based-furniture to survive during the COVID-19 pandemic. After the content validity analysis process, this research identified 15 relevant causative factors; 14 out 15 causative factors were based on literature review, and one out 15 causative factors were based on the suggestion of a panel of experts. The result of data processing with ISM methodology indicated that nine caused factors occupied the topmost level (level I). These factors are affected by the lower level and has less influence than the remaining causative factors. The result of data processing with ISM methodology also indicated two very significant causative factors that threaten SMEs of wooden-based furniture to survive during COVID-19, namely limitations on freedom of movement from the government and the unexpected change of rules (i.e., regulation and laws) on the enterprise or on the market in which the SMEs operate

In terms of managerial implications, this research makes some recommendations to the government and policymakers to assist SMEs of wooden furniture to survive during COVID-19. By identifying the underlying causative factor, this study may provide important feedback for decision-makers to allocate their attention toward addressing the causative factors. In addressing the causative factor, the government or policymakers cannot stress all causative factors simultaneously; instead, they must determine which ones pose the greatest danger to SMEs producing wooden-based furniture and reduce them early on. Additionally, attempts to minimize the most influential causative causes may solve other causative factors. Additionally, this study contributes to the body of knowledge by highlighting the causative factors that threaten the SMEs to survive during the COVID-19 pandemic using a scientific approach (i.e., ISM methodology) that can aid in more scrutinized research the development of a robust method for assessing the causative factors.

This study has several limitations. First, the study only looks at the problem that wooden-based furniture has. It doesn't look at the problems that other industries have, like the problems that wooden-based furniture has. Future studies should try to find out about other industries as a comparison. As a second limitation, the factors that are thought to have caused them don't work in real life. Because of these limitations, future studies should test the causative factors that threaten SMEs of wooden-based furniture to survive during COVID-19 pandemic in the real world or even make a simulation model to see how a certain factor affects the performance of SMEs.

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7. References

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