Shopping Centre Recovery Strategy Formulation using SWOT-MCDM Method

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Abstract

Indonesia experienced an economic catastrophe as a result of the COVID-19 outbreak. The shopping center industry as a place for public transactions has been severely affected, especially with the accelerated transition to online shopping platforms. The expected outcome of this research is an alternative strategy for shopping center performance's recovery. SWOT (Strength, Weakness, Opportunities, and Threat) method identifies the company's internal and external factors obtained through expert interviews. The method used to find the weight of each internal and external SWOT factor is FAHP. The performance of each alternative strategy is assessed using the Complex Proportional Assessment (COPRAS) method. This study resulted in two strategic priorities, accommodate a vaccination facility and buy online pick up offline (BOPIS) method facilities.

Keywords
Shopping Centre; COVID-19 Pandemic; Strategic Management; SWOT; COPRAS;

1. Introduction
The world reshaped in March 2020, when the World Health Organization (WHO) proclaimed COVID-19, a new form of beta coronavirus as a global pandemic. The Indonesian government implements the national social restriction regulation, which was aimed to control the transmission rate. The regulation includes people interaction limitations and urges offices/schools to implement work/learn from home, cancel any religious ceremony that could form a crowd, limit any social or cultural activities in public, and close all public spaces.

Shopping centers function as a meet-up place for society suffers a significant impact from the regulation. The regulation and public concern regarding safety and health protocols has further influenced people's shopping methods shifted from offline. Indonesia as the first country to have the highest online transaction in Southeast Asia and are expected to escalate in the following years are impacted significantly (Dachyar & Banjarnahor, 2017). Data shown in Figure 1 pictured the value of e-commerce transactions in Indonesia for 2017-2020 has a compounded annual growth rate (CAGR) of 85% (Statista, 2020).
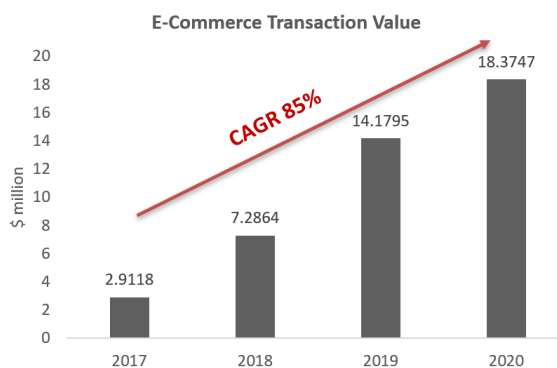
Figure 1 Indonesia Ecommerce Transaction Value 2017-2020

The rapid growth of e-commerce transactions will most influence the "B" and "C" class shopping centers (Kircher, 2013). The decline of visitors resulted in a weak tenant's ability to pay rent, especially in a neighborhood-scale shopping center whose market segment are the local communities meanwhile the expenses for additional health protocol arises. Increasing global competition and diverse customer needs, add by the development of Information Technology and Information System, has resulted in a more fast, flexible, and customer-centered practices organization (Dachyar et al., 2015). The formulation for shopping mall performance recovery are needed to maintain the relevance of neighborhood-scale shopping centers.

1.1 Objectives
The aim of this research is to formulate a strategy that can help restore the performance of shopping centers based on its internal and external environmental factors.

2. Literature Review
Strategic management can be conceptualized as a set of theories supported by tools and techniques formulated to help a manager think and plan strategically (Qehaja et al., 2017). The combination of strategic planning and performance monitoring is the emphasis of strategic management. For a strategy to be successfully implemented in an organization, it is necessary to update knowledge and adjust to its internal and external environment (Jami Pour et al., 2018). Previous studies has used strategic management for strategy formulation and performance maintanance (Chijioke et al., 2018) (Njagi & Kombo, 2014)(Damilola et al., 2015) also in shopping center management (Ioniță, 2017; Sparks, 2003).

The analysis of Strengths, Opportunities, and Threats (SWOT) is a framework tool used for strategic management in a company or organization. The analysis can build organizational strategy and as a driver to achieve competitive advantage (Schaeffer, 2017). SWOT analysis is generally applied to analyze both the internal environment and the external environment to achieve a systematic approach and decision support. However, the SWOT analysis cannot actuate the relative importance of each factor and subfactor (Živković et al., 2015). To optimize the SWOT analysis, AHP methods is used to establish each factor's weights and prioritize the factors based on their level of importance (Saaty, 1986). SWOT analysis were commonly used for strategic management purposes (Arslandere, 2019; Hashemi et al., 2012).

Analytic Hierarchy Process (AHP) method is a tool found by Professor Thomas Lorie Saaty to prioritize various alternatives in problem-solving situations as a measurement tool used to find the interval scale of pairwise comparisons for a decision-making process that is influenced by multifactor (Santoso et al., 2016). The use of crisp numbers in original AHP are inadequate and inappropriate because the ambiguity of the stakeholder's judgments (Tavana et al., 2016) therefor fuzzy numbers was incorporated into the AHP pairwise comparison process to lessen the shortcoming. Fuzzy set theory was first developed by Zadeh (Medic et al., 2018). It is constructed to help with complex problems involving subjective/biased uncertainty. When language variables are utilized to depict a problem, subjective ambiguity occurs. (Medic et al., 2018). Fuzzy AHP method in strategic selection and management has been extensively carried out in previous studies (Kahraman et al., 2008; Papapostolou et al., 2020) for fuzzy in SWOT-

AHP method, (Kuzu, 2020) for fuzzy AHP in strategy selection, (Güler & Büyüközkan, 2019) fuzzy AHP in strategy analysis.

Complex Proportional Assessment (COPRAS) method was found by Zavadskas et al. 1996, assumed a dependence of each alternative's significance and level of utility on the existing positive and negative criteria. In COPRAS, a positive ideal solution is one that lowers the cost criterion while increasing the benefit criteria, whereas a negative ideal solution increases the cost criteria while decreasing the benefit criteria. (Midyanti, 2018). In COPRAS calculation, the weight of the criteria in this method is not determined hence many previous studies paired the COPRAS with other MCDM methods; (Organ & Yalçın, 2016; Stević, 2016) for COPRAS-AHP, (Rezaeiniya et al., 2012) for COPRAS-ANP, (Eltarabishi et al., 2020) for COPRAS-ARAS.

3. Methods
Research methodology starts with an interview session with experts to obtain a SWOT factor/subfactor and construct a TOWS matrix to generate alternative recovery strategies. Distribution of the first questionnaire to experts were processed by fuzzy AHP to gain the final weight of each factor and subfactor. The final weight was compared to each alternative strategy's score obtained from a questionnaire filled by experts in a COPRAS method calculation. COPRAS calculation result established each alternative strategy's performance score and is mapped out in an Impact-Effort Diagram based on its implementation effort determined by an expert.

4. Data Collection
Interview with experts was conducted to determine SWOT analysis of the research subject. Experts in this research were five people from the shopping center management team that has work in this field for more than ten years (Dachyar et al., 2015). Six strength subfactors, four weakness subfactors, three opportunities subfactors, and three threat subfactors were obtained and will be used as a criterion in the following calculation. Criteria reduction is made by experts from the Mall Perdana management team to validate the impact of each subfactor on the company's performance recovery. Subfactor validation is done by questionnaire distribution which uses a Likert 1-5 scale questionnaire where one represents very uninfluential and five represent very influential. Subfactor with the geometric mean higher than the geometric mean of the factor will be used in further calculation. The expert's judgments resulted in 16 criteria considered essential for the company's recovery, as seen in Table 1.

Table 1 Fixed Factor and Subfactor

Factor	Subfactor (criteria)	
Strengths	S1	Strategic location
	S2	Direct inspection on the goods
	S3	Instant Ownership
	S4	Entertainment facilities
	S5	Online shopping guide
	S6	Health and sanitation standard
Weaknesses	W1	The majority of space are indoor
	W2	Dark ambiance, unkempt decoration
	W3	Limited food options
Opportunities	O1	Lifestyle Center
	O2	Available Outdoor Space
	O3	Growth of Information and Technology
	O4	Distribution of Vaccine

Threats	T1	Ecommerce
	T2	Government Policy
	T3	Industry competition

After the fixed subfactors are determined, the next step is to construct the TOWS matrix to obtain the alternative strategy for performance recovery by combining Strength subfactors and Opportunity subfactors, Strength subfactors and Threat subfactors, Weakness subfactors and Opportunity subfactors, and Weakness subfactors and Threat subfactors (Table 2).

Table 2 TOWS Matrix

		S	W
Recovery Strategy		S1: Strategic Location S2: Direct inspection on the goods S3: Instant Ownership S4: Entertainment facilities S5: Online shopping guide S6: Health and sanitation standard	W1: The majority of space are indoor W2: Dark ambiance, unkempt decoration W3: Limited food options
O	O1: Lifestyle Center O2: Available Outdoor Space O3: Growth of Information and Technology O4: Vaccine Distribution	SO1: Omnichannel Strategy (S2, O1, O3) SO2: Create new outdoor events with mall tenants (S3, O2) SO3: Vaccine Facility (S1, S6, O4) SO4: Opening the movie theater with vaccine/ PCR as the requirement (S4, S6, O4)	WO1: Mall operational hours segmented by age (W1, O1) WO2: Renovation of Mall Perdana's floors, walls, and renew and maintain the decorations (W2, O1) WO3: Food contest between tenants as a marketing strategy (W3, O3)
T	T1: Ecommerce T2: Public Policy T3: Industry Competition	ST1: Implement the "Buy Online Pick up In Store" strategy (S1, S2, T1)	WT1: Hybrid event (W1, T3) WT2: Rearrange the selection of F&B tenants with research according to Mall Perdana's customer segmentation (W3, T3)

5. Results and Discussion

5.1 Weighting of Factor and Subfactor with Fuzzy AHP Method

First, pairwise comparison with fuzzy numbers approach is used to scale the factor and subfactor weight. The global and local weight were obtained after the assessment for each factor and subfactor were complete, as seen in Table 3. The multiplication of local and global weight will give the final weight for each subfactor.

Table 3 Weighting Result for each Factor and Subfactor

Factor	C Weight		Subfactor	Local Weight	Global Weight	Global Rank
Strengths	0.22	S1	Strategic location	0.08	0.02	15
		S2	Direct inspection on the goods	0.09	0.02	14
		S3	Instant Ownership	0.10	0.02	13
		S4	Entertainment facilities	0.22	0.05	11
		S5	Online shopping guide	0.07	0.02	16

Factor	C Weight		Subfactor	Local Weight	Global Weight	Global Rank
		S6	Health and sanitation standard	0.43	0.09	4
Weaknesses	0.21	W1	The majority of space are indoor	0.53	0.11	2
		W2	Dark ambiance, unkempt decoration	0.34	0.07	5
		W3	Not unique food options	0.13	0.03	12
Opportunities	0.34	O1	Lifestyle Center	0.19	0.06	9
		O2	Available Outdoor Space	0.21	0.07	6
		O3	Information and Technology	0.17	0.06	10
		O4	Distribution of Vaccine	0.43	0.14	1
Threats	0.23	T1	E-commerce	0.29	0.07	7
		T2	Government Policy	0.28	0.07	8
		T3	Industry competition	0.43	0.10	3

Fuzzy AHP calculation above shows the highest weight factor is Opportunities followed by Threats, Strengths, and Weaknesses. For the subfactor, the opportunity of Distribution of Vaccine (O4) has the highest weight then followed by weakness of the mall's majority of space are indoors (W1), and tight competition in shopping center industry (T3). Strategic Location (S1) has the lowest importance weight related to Mall Perdana's given value is to provide for the neighborhood therefore its location is not necessarily crucial except for travelers who specifically head toward Mall Perdana.

Weights of the subfactor was established subsequently calculates of the expert's judgment's consistency. There is more than one value calculation for each pairwise comparison matrix (Gogus & Boucher, 1998) where CRm calculates mean value consistency and CRg calculates the lower and upper limit consistency. The results of CRm and CRg calculations performed for each factor and sub-factor show a number below 0.1 (See Table 4). Based on Saaty's approach, a 0.1 ratio of consistency or below is allowed for each matrix. Thus, all weighted values at the fuzzy AHP stage can be consistent and used for research materials.

Table 4 Consistency Ratio

Indicators	CRm	CRg
SWOT Factor	0.032	0.09
Strength Subfactor	0.028	0.083
Weakness Subfactor	0.013	0.030
Opportunities Subfactor	0.024	0.068
Threat Subfactor	0.059	0.074

5.2 Recovery Strategy Evaluation using the COPRAS Method

Data used in this step is an expert's judgment to evaluate each alternative strategy and its level of relevance toward each criterion based on its benefit and cost criteria. Expert asses alternative strategy with a 5-point Likert scale where one means each criterion are not influential towards the alternative strategies and five means each criterion is very influential towards the alternative strategies. Weights of each criterion used to evaluate the alternative recovery strategies are obtained from the data processed in the previous stage with the fuzzy AHP method.

Expert's judgment was then processed with the COPRAS method. Calculation of Qi parameters indicates the relative significances score of each alternative strategy. Ui is the utility degree or performance score of the alternative strategy determined by the comparison of the Qi of the alternative strategy with the highest significance found in the alternative strategy's Qi.

Processed data shows the strategy with the highest value is to provide a vaccination facility at Mall Perdana (SO3) followed by an arrangement of new outdoor activity in Mall Perdana's available spaces (SO2) with a utility rate 89.89% and providing "Buy Online, Pickup in Store" facilities (ST1) are in the third position with a utility rate of 89.48%. The last rank is the renovation of the floors, walls, and ornaments in Mall Perdana strategy (WO2), with a utility rate of 79.76%. Table 5 shows overall the rank and utility rate of the alternative strategy.

Table 5 COPRAS calculation of the alternative strategies

	Alternative Strategy									
	SO1	SO2	SO3	SO4	WO1	WO2	WO3	ST1	WT1	WT2
Pi	0.0045	0.0052	0.0060	0.0051	0.0044	0.0046	0.0047	0.0050	0.0049	0.0048
Ri	0.0025	0.0025	0.0024	0.0026	0.0023	0.0028	0.0026	0.0024	0.0025	0.0026
Qi	0.0074	0.0080	0.0089	0.0078	0.0074	0.0071	0.0074	0.0079	0.0077	0.0074
Ui	0.8305	0.8989	1.0000	0.8752	0.8372	0.7976	0.8287	0.8948	0.8712	0.8358
Rank	8	2	1	4	6	10	9	3	5	7

5.3 Sensitivity Analysis

In the previous calculation, the impact of each alternative strategy was determined based on the performance score in the COPRAS calculation. The effort of the alternative strategy's implementation plays a significant impact therefore the calculation of its effort is essential. In this step, the general manager of Mall Perdana will determine the effort level uses a 5-Likert scale, with one means a very low effort and five means a very big effort. Table 6 shows the implementation effort determined.

Table 6 Effort Level

No	Alternative Strategy	Effort Level
1	SO1: Omnichannel Strategy	4
2	SO2: Create new outdoor events with mall tenants	5
3	SO3: Vaccine Facility	1
4	SO4: Opening the movie theater with vaccine/ PCR as the requirement	5
5	WO1: Mall operational hours segmented by age	5
6	WO2: Renovation of Mall Perdana's floors, walls, and renew and maintain the decorations	4
7	WO3: Food contest between tenants as a marketing strategy	2
8	ST1: Implement the "Buy Online Pick up In Store" strategy	3
9	WT1: Hybrid event	3
10	WT2: Rearrange the selection of F&B tenants with research according to Mall Perdana's customer segmentation	5

Alternative strategies can be grouped into four quadrants as seen below based on the level of performance evaluation of each strategy obtained from the COPRAS calculation and the level of effort to implement the alternative strategy. Below in Figure 2 are the mapped strategies.
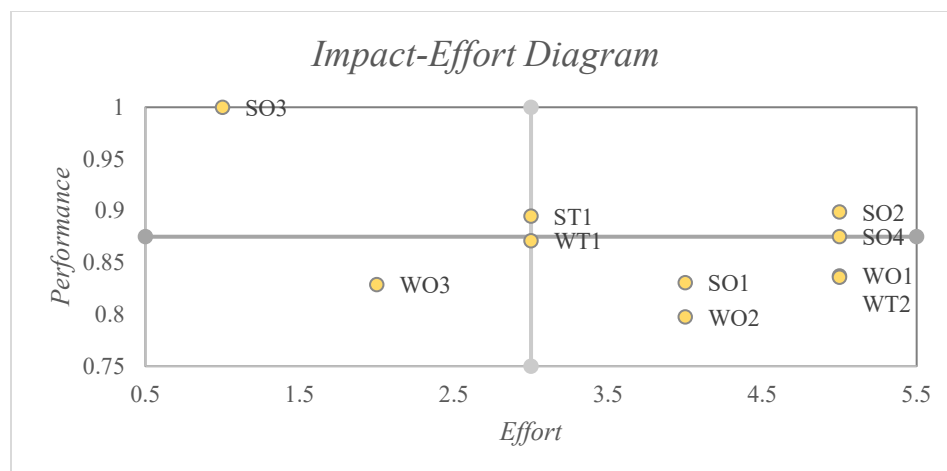
Figure 2 Impact Effort Diagram

It can be concluded from the graph above the priority strategy to implement at the Perdana Mall is the vaccination facilities for local residents (SO3) and collaboration with an e-commerce company to implement the Buy Online Pickup In-Store (BOPIS) facility (ST1). In the long term, strategies are also needed to retain customers in the future. For this reason, the strategies in the second quadrant to create new outdoor activities (SO2) and open the cinema facilities with requirements of vaccination or PCR (ST1) are prioritized in the following implementation.

6. Conclusion

Pandemic lockdown regulations severely impact the shopping center industry, especially with online shopping platforms as the product substitute gained more acknowledged over the years. Good strategic management is needed to restore its performance midst of a pandemic. Strategy formulation starts with an interview with experts to generate the internal and external criteria of Mall Perdana and to obtain alternative strategies. Later the strategies are evaluated based on the factor and subfactor, which are considered essential for the performance recovery by experts. Sixteen subfactors with six strengths, three weaknesses, four opportunities, and three threats from the SWOT analysis are chosen based on literature review and expert judgments. Calculated with the fuzzy AHP method, Opportunities are found as the factor with the highest level of importance from the other four SWOT factors. Distribution of Indonesian citizens (O4) has the highest level of importance out of 17 subfactors. The weights of each factor and subfactors obtained with the fuzzy AHP are later inputted in the COPRAS method calculation to evaluate each alternative strategy. Alternative strategy with the highest performance value based on the COPRAS method is Providing Vaccination Facilities (SO3) and the implementation priority alternative strategy based on the Impact-Effort Diagram is to provide vaccination facilities (SO3) and buy online pick up in-store (ST1) facilities.

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