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Digital Technology Adaptation Strategy Formulation for Television Media Company in Indonesia Using SWOT-Fuzzy AHP-TOPSIS

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Abstract: The existence of digital acceleration causes positive and negative effects on the television media industry in Indonesia, such as decreasing of television media users, switching to using internet platforms. The complexity of the digital technology adaptation requires a systematic approach to analyze the company's environmental factors. The aim of this study is to design strategies so that television media companies can compete competitively under digital acceleration. This study included the SWOT, Fuzzy AHP, and TOPSIS methodologies. From six proposed alternative strategies, using internet for program promotion in the form of interactive content becomes a prioritized strategy to improve business performance.

Keywords: Digitalization; Fuzzy Analytic Hierarchy Process; SWOT; Television Media; TOPSIS

1. Introduction

Digital Transformation is a process of change that involves not only the use of new technologies, but also changes in business models and the formulation of digitalization strategies so that dynamic business changes occur [1)]. Digital transformation is the driving force for change in the business world because it utilizes new internet-based technologies with implications for the whole society[2)]. Digital transformation utilizes digital technology, often combined with Internet of Things (IoT) and artificial intelligence (AI)[3)], to change the business unit paradigm, enables service to become more available to customers[4)], and transform their decision making[5)]. Cost expenditure on digital transformation is expected to continue to increase from 2017 to 2025 with a compound annual growth rate of +14.32%. Figure 1 shows the cost data for digital transformation globally from 2017 to 2025[6)]. In response to this forecast, there are two main factors that greatly influence spending on digital transformation, namely the phenomenon of the COVID-19 pandemic and customer demand. A McKinsey Survey suggests potential changes related to digitization in a business during the COVID-19 pandemic, that the difference in time needed in implementing and digital transformation after COVID-19 pandemic is 20 to 25 times faster than before the pandemic[7)].

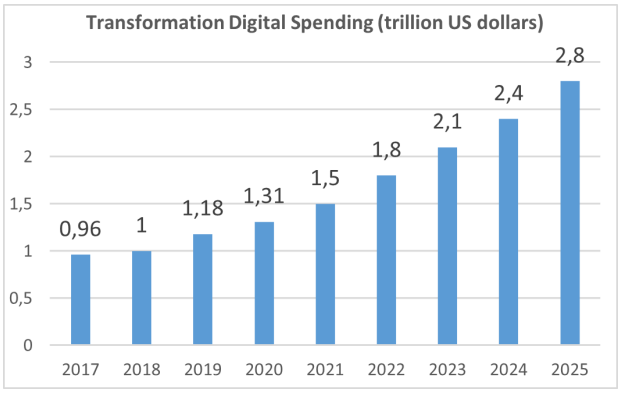

Fig. 1: Digital Transformation Spending Worldwide

The pandemic's effects are multifaceted because they have been catastrophic to both public health and the majority of the country's economic activity[8)]. Technology serves as a remedy for this issue. One of the winners in the epidemic is technology because people cannot communicate physically during that time, therefore they must rely on it. Indonesia now has 212.35 million internet users, making it the third-largest internet user nation in Asia behind China and India[9)]. This figure represents 78.58 percent of Indonesia's entire population. According to the results of the population census, there are 270.20 million people living in Indonesia as of 2016[10)]. A trend of media use has emerged as a result of the growth of the internet. The public uses media as a tool to study information and discover enjoyable amusement. One

example of various media includes watching TV, listening to radio, and other things. The growth of Indonesian media types is faster than the global average[11], as shown in Fig. 2.

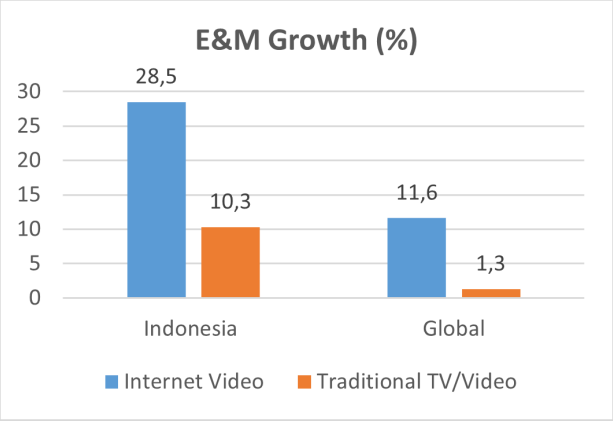

Fig. 2: Comparison of The Growth of Indonesian and Global Media Types

The three main activities most often used by internet users in the media are: first is the internet usage time for browsing for 6 hours 58 minutes, the second is watching television both in the form of broadcast and streaming for 3 hours 20 minutes, and the third is the use of social media for 2 hours 27 minutes[10]. From this data, it can be concluded that watching is an activity of using media that is often carried out by most people and has become one of the common habits. Therefore, nowadays the media and entertainment industry are competing to create programs that can captivate the public. One of the newest types of services that are currently trending is the use of watching TV through Subscription Video on Demand (SVOD). However, a report[12] said the streaming business is still in the early stages of development in Indonesia's emerging markets, with only 3% of the country's 270 million population subscribing to SVOD services. To be able to compete and increase revenue, the media and entertainment industry needs to analyze and follow media and entertainment trends[11]. Services in the form of internet video (28.5%) are more developed when compared to conventional TV services with growth (10.3%). This raises an important question: Is the trend of using the video internet like SVOD marks the end for the conventional television industry?

A television media company in Indonesia delivers a range of intriguing, high-quality entertainment programs that help Indonesians learn and gain insight. Currently in Indonesia, all TV stations are entering a transition period to Digital TV, so now companies need to understand the opportunities and threats that will be faced along with the emergence of internet platforms that also offer more diverse entertainment shows and are in demand by the current generation. According to previous researches, digital transformation can provide benefits and opportunities to the company, such as organizational change and development of new business models[13], reanalyze their value chains to identify and develop digital value chains[14], and value creation by utilizing customer experience, operational process, and new digital business model[15].

Previous researches regarding television media strategy in digital era have been conducted. A research[16] explored the Covid-19 impact on European public television. Another research[17] discussed how TV industry survive in digital world. The next research[18] showed that SVOD has transformed Spanish TV production. Research about Indonesian TV company strategies has been previously conducted[19][20], however they are more focused on communication strategies, less focus on business strategies. Therefore, to fill the research gap, a strategy formulation that can maintain the company's business performance as one of the private TV stations in Indonesia is necessary. The research is aimed at helping the television media company in formulating a digital technology adaptation strategy that can be accomplished by taking into account the company's strengths, weaknesses, opportunities, and threats on the internal and external environments.

2. Literature review

2.1 Strategic management

Strategic Management can be defined as the science and art of formulating, implementing, and evaluating decisions of various cross functions within an organization to achieve an objective[21]. From this definition, strategic management focuses on integrating management, marketing, finance/accounting, production/operations, research and development, and information systems to achieve organizational success. Strategic management requires an analysis of the company's internal and external environment to maximize the utilization of resources in relation to the objectives to be achieved[22]. Strategic management involves the process of evaluation, planning, and implementation used to strengthen and sustain a current competitive advantage[23]. Therefore, strategic management can be referred as designing, putting into practice, and assessing a company's performance with the purpose of forecasting the future and adjusting the resources held by certain conditions in order to achieve benefits for the firm and meet stakeholder expectations.

2.2 SWOT analysis

Strengths, Weaknesses, Opportunities, and Threats, or SWOT, is a technique used by management teams to identify internal and external elements that have an impact on business operations and the overall health of the firm[24]. Strengths are internal capabilities and advantageous aspects of a company. Weaknesses are internal constraints or circumstances that could harm a company's operations. Opportunities are elements or traits that can promote

corporate development with connections outside the corporation. Threats are negative external forces that may impede or postpone the attainment of objectives. SWOT analysis can result in a TOWS Matrix by segmenting four conceptually distinct strategic groups into Strength-Opportunities (SO), Strength-Threats (ST), Weaknesses-Opportunities (WO), and Weaknesses-Threats (WT), which can be used to develop alternative strategies[25].

1. The Strength-Opportunities (SO) strategy uses internal forces to take advantage of external opportunities (ideal case).
2. The Strength-Threats (ST) strategy that goals is to reduce internal weaknesses by taking advantage of external opportunities.
3. The Weaknesses-Opportunities (WO) strategy is an effort to utilize force to avoid or mitigate the external effects of challenges.
4. The Weaknesses-Threat (WT) strategy is a defensive tactic that aims to reduce internal weaknesses and external threats.

2.3 Fuzzy analytic hierarchy process

Analytical Hierarchy Process (AHP) is one of multi-criteria decision making (MCDM) approach to determine order of priority from various alternatives in solving a problem using hierarchical structure[26]. To assess alternatives based on several criteria, it employs a hierarchical framework. Pairwise comparisons utilizing a nine-point scale form the basis of AHP. AHP can be utilized for criteria weighting[27] and combined with other MCDM methods to select alternatives. Because of the haziness and ambiguity of the decision-makers' judgements, the use of precise figures in conventional AHPs appears inadequate and unsuitable[28]. Additionally, decision-makers typically use language to convey their thoughts. In order to address this shortcoming, fuzzy logic is added to the AHP pairwise comparison process.

Fuzzy set theory is designed to deal with issues of arbitrary uncertainty[29]. Subjective ambiguity occurs when language variables are used to describe an issue. This is crucial for MCDM problems since decision-makers frequently employ linguistic factors to express their views on a particular problem. The concept that items have a degree of membership in the fuzzy set is the foundation of fuzzy set theory[29]. Monotonic fuzzy membership functions, triangles, and trapezoids (i.e. fuzzy numbers) are the most commonly used in fuzzy logic[29]. Triangular fuzzy numbers (TFN) are the most widely used in fuzzy MCDM studies, due to their computational simplicity and conformity to the nature of the linguistic evaluation of experts. Fuzzy MCDM methods have been applied into various field of research[30].

The Triangular Fuzzy Number (TFN) is used to describe linguistic variables definitively. TFN ($\tilde{M}$) is depicted in the form of a triangular curve as in TFN it consists of 3 membership functions i.e., expressing the lowest value, middle value and highest value annotated with (l; m; u).

$$\mu\left(\frac{x}{M}\right) = \begin{cases} \frac{x-l}{m-l} & ,l \le x \le m \\ \frac{u-x}{u-m} & ,m \le x \le u \\ 0 & ,x\ others \end{cases} \quad (1)$$

2.4 Technique for order of preference by similarity to ideal solution (TOPSIS)

The Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS), developed by[31], is a well-known technique in traditional MCDM. The TOPSIS algorithm was created with the premise that the selected option should be the closest to the ideal solution in the positive direction and the furthest from the ideal solution in the negative direction.[32]. TOPSIS is based on the idea that when an alternative has the shortest distance to the ideal solution, it can be considered as the best alternative. TOPSIS has been frequently discussed in previous research for alternative selection, such as supplier selection[33].

3. Research methodology

The first stage of data collection begins with conducting interviews with internal company experts to analyze the business environment of media companies (Television Stations) by identifying factors of the company's internal and external environment. Some experts with at least 5 years of experience in the relevant industry were chosen as interviewees to help establish the credibility of the gathered insights. Table 1 shows the experts involved in this research and the research steps in which they were involved (SWOT, Fuzzy AHP, TOPSIS).

Table 1. Experts List and Involvements

Position	Experience	Involvement
Program Operation Manager	>5 years	Factors discovery, SWOT, FAHP, TOPSIS
Quality Control Manager	>15 years	Factors discovery, SWOT, FAHP, TOPSIS
Supervisor Library	>10 years	Factors discovery, SWOT, FAHP, TOPSIS
Digital Transformation Manager	>5 years	SWOT
Head of Purchasing	>5 years	FAHP, TOPSIS
Senior Staff Program Services	>20 years	FAHP

From Table 1 we can summarize that at least four experts were involved in each step. The recommended number of experts varies from two to 20 individuals[34][35][36],

therefore the number of experts involved in this study was considered sufficient.

In order to determine the company's strengths, weaknesses, opportunities, and threats, a SWOT analysis will then be created based on the considerations obtained from the interview results. SWOT analysis is used to discover internal and external factors of television media companies and then group them into four groups of factors consisting of strengths, weaknesses, opportunities, and threats. Then the SWOT factor is used to develop alternative digital technology adaptation strategies with the TOWS matrix. The factors in the SWOT analysis will then be reassessed by the expert using a questionnaire based on their level of importance in designing the media company's digital technology adaptation strategy.

The impact of strategic internal (strengths and weaknesses) and external (opportunities and threats) elements on the business of media companies is assessed using the Fuzzy AHP method. Fuzzy AHP is utilized to determine the weight of the SWOT factor and its subfactors. A questionnaire will be completed by the experts and processed using the Fuzzy AHP approach. The weight value for each element and subfactor in the SWOT analysis is the outcome of processing questionnaire data with Fuzzy AHP, which will then be used in calculations using TOPSIS method. TOPSIS is used to determine the performance value of each alternative digital technology adaptation strategy of television media company based on the weighted SWOT factor. TOPSIS will generate a CCi performance value for each alternative digital technology adaptation strategy based on the factors in the SWOT analysis. Digital technology adaptation strategies that have a high level of performance are prioritized to be implemented in Television Media Company.

4. Result and discussion

In the SWOT analysis performed on the television media company, 4 strength subfactors, 3 weakness subfactors, 4 opportunity subfactors, and 5 threat subfactors were identified from in-depth interview with the experts. The subfactors were confirmed by numerous previous research in order to validate the subfactors to be featured in the SWOT analysis (presented in Table 2).

Based on the previously acquired SWOT analysis, alternative digital technology adaptation strategies are then built using the TOWS Matrix. Delphi methods were conducted to identify and develop alternative strategies in TOWS matrix based on SWOT analysis involving experts. Consequently, six strategies can be considered when selecting choices based on the TOWS matrix shown in Table 3. The assessment of the importance of SWOT factors at the television media company was carried out based on the weighting of factors and subfactors obtained from the TOWS matrix. A pairwise comparison questionnaire for experts was developed. Fuzzy AHP was then used to determine the weight of the SWOT factors. The resulting weights are presented in Table 4.

Table 2. Reference List of SWOT Subfactors on Television Media

No	Factor	Sub Factor	Reference
1	Strength	Unique Entertainment	37)38)
2		Appropriate Information	39)
3		Program Quality	38)
4		Human Resources	39)
5	Weakness	Inadequate Program Infrastructure	37)38)
6		Sources of Revenue from Advertising	39), 40)
7		Inaccuracy of segment targets	41)
8	Opportunity	Dynamic Trends	42)
9		Innovation	38), 43), 44)
10		Social Media Engagement	38), 45)
11		Advances in Technology and Information	38)
12	Threat	Transition Time	1)
13		Audience Perception	37), 40)
14		Internet Platform (SVoD)	38), 46)
15		Political Policy	47), 48)
16		Industry Competition	37)

Based on Table 4, the factor that has the largest weight value is Threat which has a value of 0.368. While the factor with the smallest weight value is Opportunity with a weight of 0.191. This indicates that threat factors in SWOT analysis have the highest importance compared to other factors. Inadequate Program Infrastructure (W1), which is a subfactor of Weakness, occupies the first position as the subfactor that affects the performance of the television media business the most with a weight value of 0.147. While the Dynamic Trends subfactor (O1) occupies the lowest position with a weight value of 0.030.

TOPSIS was then used to determine the performance of the Digital Technology Adaptation Strategy. Each alternative strategy will have performance value based on the TOPSIS data processing findings. Experts will assess the suitability of the strategies with the criteria. Table 5 shows the results of the performance value (CCi) as well as the rating for each strategy. The table shows that the alternative strategy with the highest value is Utilizing internet media such as YouTube, Facebook, Instagram, TikTok for Program Promotion in the form of interactive content (WO2) with a CCi performance value of 0.934, while the alternative with the lowest value is Creating new program variants according to the audience's wishes (SO1) with a CCi performance value of 0.425.

Table 3. TOWS Matrix of Television Media Company

Digital Technology Adaptation Strategy		**Strength (S)**	**Weakness (W)**
		S1: Unique entertainment S2: Appropriate information S3: Program quality S4: Human Resources	W1: Inadequate program infrastructure W2: Appropriate information W3: Inaccuracy of segment goals
Opportunity (O)	O1: Dynamic Trends O2: Innovation O3: Social Media Engagement O4: Advances in Technology and Information	**SO1**: Creating new program variants according to the audience's wishes (S1, O1, O2) **SO2**: Improve the capabilities of human resources related to the internet and cyber (S4, O1, O4)	**WO1:** Deliver ads that are action-to-buy and have audience engagement (W3, O3) **WO2:** Utilizing internet media such as YouTube, Facebook, Instagram, TikTok for Program Promotion in the form of interactive content (W2, W3, O1, O3, O4)
Threat (T)	T1: Transition Time T2: Audience perception T3: Internet Platform (SVoD) T4: Political Policy T5: Industry Competition	**ST1:** Launch of Application-Based Digital Technology Platform (S2, S3, T1, T2, T3, T5)	**WT1:** Building a digital media ecosystem (W1, W2, T1, T2)

From the results of weighting of SWOT factors and subfactors, it shows that according to experts, currently in television media company the program infrastructure is still not ready to design programs that can compete in the era of digital acceleration, where currently there are many digital channels that are more in line with people's habits today. From the TOPSIS results, the strategy of utilizing internet media such as Youtube, Facebook, Instagram, Tiktok for Program Promotion in the form of interactive content (WO2) is the top priority for adapting digital technology. This strategy can be used to promote programs broadcasted by the television media company using popular social media. Television media companies currently need to do more interactive promotions through internet media such as Youtube, Facebook, Instagram, and Tiktok. Social media is now so prevalent that 93 percent of consumers think businesses should have a social media presence[49]. These strategies can be applied by the television media companies in Indonesia to help them adapting digital technology, in order to survive and maintain competitiveness in the digital era.

Table 4. Local Weights and Global Weights of SWOT Analysis Factors and Subfactors

Factor	**Factor Weight**	**Sub Factor**		**Local Weight**	**Global Weight**	**Rank**
Strength	0.213	S1	Unique Entertainment	0.170	0.036	15
		S2	Appropriate Information	0.289	0.061	7
		S3	Program Quality	0.237	0.050	10
		S4	Human Resources	0.304	0.065	6
Weakness	0.228	W1	Inadequate Program Infrastructure	0.643	0.147	1
		W2	Sources of Revenue from Advertising	0.167	0.038	13
		W3	Inaccuracy of segment targets	0.191	0.044	12
Opportunity	0.191	O1	Dynamic Trends	0.155	0.030	16
		O2	Innovation	0.193	0.037	14
		O3	Social Media Engagement	0.301	0.058	9
		O4	Advances in Technology and Information	0.351	0.067	5
Threat	0.368	T1	Transition Time	0.125	0.046	11
		T2	Audience Perception	0.159	0.059	8
		T3	Internet Platform (SVoD)	0.199	0.073	4
		T4	Political Policy	0.222	0.082	3
		T5	Industry Competition	0.295	0.109	2

5. Conclusion

In this study, the SWOT and MCDM methodologies (Fuzzy AHP and TOPSIS) were used to develop strategies for television media company to adopt new technologies. Using SWOT Analysis, the SWOT subfactor was generated. There were 16 subfactors, which were broken down into four strength subfactors, three weakness

subfactors, four opportunity subfactors, and five threat subfactors that influence the adoption of digital technology by a television media company.

Table 5. CCi for Digital Technology Adaptation Strategy

Alternative Strategies	CCi	Rank
Utilizing internet media such as YouTube, Facebook, Instagram, TikTok for Program Promotion in the form of interactive content (WO2)	0,934	1
Improving the capabilities of human resources related to the internet and cyber (SO2)	0,645	2
Building a digital media ecosystem (WT1)	0,642	3
Deliver ads and impressions that are action-to-buy and have audience engagement (WO1)	0,594	4
Launch of Application-Based Digital Technology Platform (ST1)	0,553	5
Creating new program variants according to the audience's wishes (SO1)	0,425	6

Threat is the factor of the highest importance compared to other SWOT factors. Inadequate Program Infrastructure subfactor (W1) is the subfactor that has the highest weight value of the other 16 subfactors. Using the TOWS Matrix, six alternative strategies are synthesized which are divided into four TOWS quadrants. The performance value of each alternative strategy is then evaluated using TOPSIS to produce rankings for alternative digital technology adaptation strategies.

A strategy that has the highest performance value is the strategy of using internet media such as Youtube, Facebook, Instagram, and Tiktok for program promotion in the form of interactive content (WO2). This strategy will improve the company's business performance in terms of promotion and marketing so that the programs offered are not inferior to programs in other platforms, both TV channels and digital channels. In addition, with interactive content, the audience will be more interested so that they remain loyal to the programs offered by the company.

With the existence of research that uses a combination of SWOT and MCDM methodologies in an industrial television media company, this technique can work flexibly and help companies determine priorities for the implementation of many alternative strategies. This result can be applied by the television media companies in Indonesia to help them adapting digital technology, in order to survive and maintain competitiveness in the digital era.

However, there are still shortcomings in this study, especially related to the level of effort to execute each alternative strategy was not discussed in this study, therefore it needs to be discussed in later studies. This research also does not involve various kinds of scenarios that can affect changes in the weight of each factor and subfactor, therefore sensitivity analysis may be conducted in later studies.

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