A Strategic Decision-Making Model Combining SWOT Analysis with AHP Method

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Abstract. This research starts with the questions: How firms make strategic decisions? What strategic decision-making model does firms use? Are there any deficiencies in current strategic decision-making models? Then this research identified and solved equal weights and lacking quantitative data problem of a prominent strategic decision-making model: the SWOT analysis. By combining the SWOT analysis and AHP method, a novel, objective, quantitative, and practical strategic decision-making model is proposed. The validity and implementation process of the proposed model is demonstrated by conducting a case study on Microsoft's strategic acquisition on Activision Blizzard. The research also found a new explanation for Microsoft's strategic acquisition. That is Microsoft prioritized the Threat group and weakness group. The improved strategic-decision making model provide valuable insights for firms.

Keywords: Strategic decision-making; SWOT analysis; AHP method; Weights; Microsoft

1   INTRODUCTION

Strategic decision-making is linked to the life and death of a firm. SWOT analysis is a widely used strategic decision-making model. However, SWOT analysis is criticized by empirical literatures. The 4 SWOT groups have the same weight, result in subjective strategic decision-making. Lacking of quantitative analysis is another deficiency of SWOT analysis. Therefore, the research question of this research is how to avoid deficiencies of SWOT analysis and how firms can make correct strategic decisions effectively. The aim of this research is to solve the equal weight and lacking quantitative data problem of SWOT analysis by combining AHP method with SWOT analysis. Then propose a novel strategic decision-making method that combines AHP method and SWOT analysis. A case study on Microsoft's strategic acquisition is conducted to demonstrate the process of the novel strategic decision-making method. The result of the case study validates the effectiveness of the proposed method. Firstly, this research solves the problems of SWOT analysis, revitalize this classical decision-making model. Then, the research provides an objective and quantitative strategic decision-making model for firms. The proposed method is low-cost and practical. Eventually, the strategic decision-making model that combines SWOT analysis and AHP method can be

used in other fields of study and daily life. Data and relevant materials are collected from Statista, Microsoft's official website, journal articles, business magazines, and U.S. government websites.

2 RESEARCH METHODS

SWOT analysis is a widely used systematic approach for strategic decision-making. SWOT analysis contains 4 SWOT groups: Strength (internal competencies that bring advantages to the organization), Weakness (current internal deficiencies), Opportunity (favorable external conditions the organization can use), Threat (external conditions that may damage the organization). Each SWOT group is formed by its relevant strategic factors. Strategic factors are internal and external importance to the organization's future. Implement SWOT analysis contains 3 steps. The first step is to identify strategic factors and categorize them into SWOT groups. Then managers obtain an insight into strategic situation by analyzing strategic factors. Eventually, managers develop and adopt strategies relying on their judgments. Since SWOT analysis provided important references for decision-making in many fields, this essay chooses it to be the key theoretical background [1].

The AHP method is used to weight SWOT groups. The implementation of weighting SWOT groups using AHP consists of 3 main steps [2].

Step 1. A questionnaire survey is carried out to collect the judgment of individual experts. In this essay, the author completed the survey.

Step 2. Comparison matrix is constructed.

Comparison matrix of individual expert Pe is noted by A_e, a_e^{ij} is the relative importance while pairwise comparison of SWOT group i and SWOT group j based on the judgment of expert P_e, i =1,2, …4; j =1,2, …4; $a_{ji}^e =1/ a_{ij}^e$. SWOT group 1 is Strength, SWOT group 2 is Weakness, SWOT group 3 is Opportunity, SWOT group 4 is Threat.

$$A_e = \begin{bmatrix} a_{11}^e, & a_{12}^e, & a_{13}^e, & a_{14,}^e \\ a_{21}^e, & a_{22}^e, & a_{23}^e, & a_{24}^e \\ a_{31}^e & a_{32}^e & a_{33}^e & a_{34}^e \\ a_{41}^e, & a_{42}^e, & a_{43}^e, & a_{44}^e \end{bmatrix}$$

Nine absolute numbers are references for the values of a_{ij}^e listed in Table 1.

Table 1. The numerical values and the corresponding dominant intensities in pairwise comparison judgments.

Values of a_{ij}^e	Corresponding intensities of the dominant.
1	SWOT group i and SWOT group j are of equal importance.
3	SWOT group i moderately dominant SWOT group j.
5	SWOT group i strongly dominant SWOT group j.
7	SWOT group i very strongly dominant SWOT group j.
9	SWOT group i extremely dominant SWOT group j.
2,4,6,8	Intermediate values between the above pairs of adjacent judgments.

Step 3. Calculation of the vector Ve relating to the maximum eigenvalue of Ae. Ve implies the weights of SWOT group. Ue ($\sum_{i=1}^{4} u_{ai} = 1$) is the normalization weights of SWOT group derived from Ve, Ue is calculated by $u_{i=v_i/\sum_{i=1}^{4} v_{ai}}$. The calculation is completed by MATLAB.

3   CASE STUDY ON MICROSOFT'S STRATEGIC ACQUISITION ON ACTIVISION BLIZZARD

The first step of the novel strategic decision-making method is conducting a SWOT analysis. This research has conducted a SWOT analysis on Microsoft as an example. Microsoft is a giant corporation with around $3 trillion market value [3]. Besides software, Microsoft is engaging in game industry. Microsoft was the fourth-largest game company by revenue [4]. In 2022, Microsoft announced to acquire Activision Blizzard (ATVI) with $68.7 billion cash. Microsoft's target firm ATVI is a famous video game company which had a faint future due to lawsuits. Microsoft completed the acquisition in October 2023 [5]. This acquisition has been the largest deal in video game industry, and it lifted Microsoft to the third-largest game company in the world [6]. The acquisition's size and impact are huge, which is a strategic decision of Microsoft.

The 2 powerful strengths of Microsoft are top-tier talents and a brand portfolio. Microsoft attracted top-tier talents. After entering the Microsoft, these talents receive continuous training, further empowering their abilities [7]. These high-skill employees are a notable strength of Microsoft. Another strength is Microsoft's brand portfolio. Brand portfolio occurs when a company manages and markets several brands [8]. Microsoft engages in game industry (Xbox), telecommunication (Skype), Software (Office) and even more. This strong brand portfolio enables Microsoft to enter a new market easily.

Despite Microsoft's strength, it faces notable weaknesses. Firstly, the market share of Microsoft's consoles always lags behind Sony's PlayStation [9]. Consequently, Microsoft faces a limited sales channel and less revenue. Secondly, compared to free games, Microsoft's gamers face a higher cost. To play Microsoft's games, Gamers need to buy an expensive computer or a console. Besides, gamers need to pay for the games [10]. High cost limits the market size. High cost is an unfavorable factor for profitability since the market size is limited.

Nevertheless, the technology landscape offers abundant opportunities for Microsoft. One opportunity is the development of cloud gaming. The revenue generated by cloud gaming is steadily increasing [11]. Cloud gaming could expand Microsoft's sales channel. Another opportunity is the development of game subscription service. The subscriber of Microsoft's subscription service is steadily increasing [12]. By utilizing subscription service, Microsoft attracts more customers. The subscription fee could also contribute to the revenue. Some experts may argue that metaverse is an opportunity too. But Microsoft had given up the industrial metaverse project and laid off all the relevant employees [13]. Therefore, the metaverse is not considered as an opportunity.

Meanwhile, Microsoft faces severe threats. ATVI's bad reputation is considered as a threat. ATVI failed to collect and analyze employee complaints of workplace misconduct [14]. This failure is illustrated briefly by Lawsuits against ATVI over workplace

sexual harassments and discriminations. ATVI's bad reputation may damage Microsoft's brand image. Therefore, ATVI's bad reputation is a threat. Increasing competition in the game industry is another notable threat. Game companies now compete not only amount of the game but the quality and exclusivity of their contents [15]. The increasing competition had posed a significant threat to Microsoft.

The SWOT analysis results in 4 strategies (see Table 2). The first strategy is proposed based on the combination of Strength and Opportunity, it is suggested that Microsoft adds more games to subscription service and develops cloud-gaming. The second strategy is based on the combination of Strength and Threat, it is advisable that Microsoft develops more attractive games. The third strategy is based on the combination of Weakness and Opportunity, it is a choice for Microsoft to promote cloud gaming and subscription service on consoles. The fourth strategy is based on the combination of Weakness and Threat, it is an option for Microsoft to acquire PC games studios.

Table 2. SWOT analysis and Strategies

	Strengths	**Weaknesses**
	High skill employees. Strong brand portfolio.	Less attractive consoles. High costs for gamers.
Opportunities	Strength-Opportunity Strategy	Weakness-Opportunity Strategy
Development of cloud gaming. Development of subscription services.	Adding more games to subscription service and keep developing cloud gaming.	Promote cloud gaming and subscription services on consoles.
Threats	Strength-Threat Strategy	Weakness-Threat Strategy
Increasing Competition. Activision Blizzard's bad reputation.	Develop more attractive games.	Acquire PC game studios

At least 4 strategies are generated by SWOT analysis, but firms do not know which is the optimal strategy, because the weights of each SWOT groups are unclear. To help firms choose the optimal strategy, measuring weights of SWOT groups are essential. Therefore, the second step of the novel strategic decision-making method is to measure weights of SWOT groups using AHP method. A questionnaire survey is designed to gather data for AHP analysis.

Data Process:

Step1: Comparison matrix of filled questionnaire denoted by A.

	C1	C2	C3	C4
C1	1.00	0.20	0.33	0.11
C2	5.00	1.00	3.00	0.33
C3	3.00	0.33	1.00	0.20
C4	9.00	3.00	5.00	1.00

C1 is Strength group, C2 is Weakness group, C3 is Opportunity group, C4 is Threat group.

Step 2: Let A as comparison matrix in Matlab 2017 vision.

Step 3: Run command of [V, D] = eig(A) in Matlab 2017 vision

The maximum eigenvalue of A is 4.067, the normalization weights of SWOT groups are listed in Figure 1. The weights calculation is validated by the Consistent Ratio (C.R.) of 0.0249 in AHP.
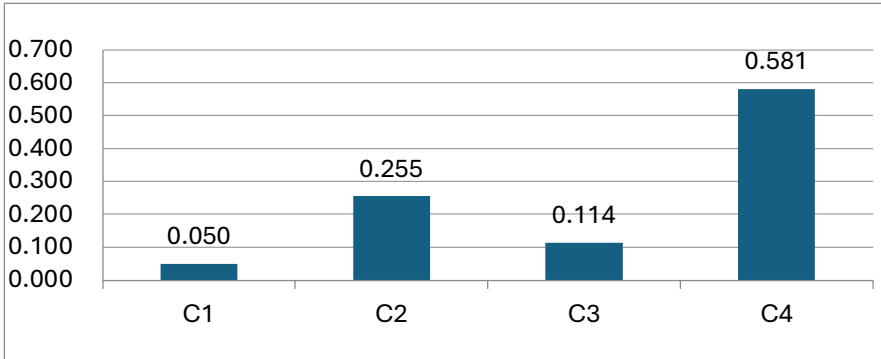

Fig. 1. Normalization weights of SWOT groups. (Author made)

C1 is Strength group, C2 is Weakness group, C3 is Opportunity group, C4 is Threat group.

It is found that Threat group has the highest weights, Weakness has the second highest weights. Therefore, the AHP method suggest that Microsoft should prioritize Threat group and Weakness group. The strategy that considers Threat group and Weakness group is acquire PC game studios, which in reality the Microsoft actually did. The effectiveness of the strategic decision-making method has been validated. The process of novel strategic decision-making method includes: conducting a SWOT analysis, using AHP method to weight SWOT groups, and strategic decision-making based on weights of SWOT groups and SWOT analysis.

4   CONCLUSION

This research first identified 2 deficiencies of SWOT analysis: Equal weights of SWOT groups and lacking quantitative data. Then, this research solved these 2 problems by weighting SWOT groups using AHP method. Eventually, by combining SWOT analysis with AHP method, this research proposed a novel strategic decision-making model. Comparing to traditional SWOT analysis that have equal weight for strategies, the novel model provides firms with optimal strategies. The process of the novel model is objective and used quantitative method. The novel model is used to analyze Microsoft's strategic acquisition on Activision Blizzard. The novel method is validated by the real strategies taken by Microsoft. The implementation of the novel strategic decision-making model is demonstrated in the case study of Microsoft's acquisition. This research has also provided a new perspective for analyzing reasons of Microsoft's strategic acquisition on Activision Blizzard. It suggests that Microsoft prioritized Threat group and Weakness group. Next, this research provides an objective, quantitative, and practical strategic decision-making model. Future research can improve the proposed model.

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Appendix

Filled Questionnaire Survey:

The design of the questionnaire is reference from the design of Yang et al. [16].

Step1: Please mark the dominant SWOT group with "X" between SWOT group A and SWOT group B.

Step2: Please mark a number to represent the dominant intensities. If you think SWOT group A and SWOT group B are of equal importance, please mark the number of "1" and ignore Step 1.

1.1. A. "Strength" __; B. "Weakness" _X_.
Equal importance ————————▶ Extremely dominant importance
"1" __; "2" __; "3" __; "4" __; "5" _X_; "6" __; "7" __; "8" __; 9" __.

1.2. A. "Strength" __; B. "Opportunity" _X_.
Equal importance ————————▶ Extremely dominant importance
"1" __; "2" __; "3" _X_; "4" __; "5" __; "6" __; "7" __; "8" __; 9" __.

1.3. A. "Strength" __; B. "Threat" _X_.
Equal importance ————————▶ Extremely dominant importance
"1" __; "2" __; "3" __; "4" __; "5" __; "6" __; "7" __; "8" __; 9" _X_.

1.4. A. "Weakness" _X_; B. "Opportunity" __.
Equal importance ————————▶ Extremely dominant importance
"1" __; "2" __; "3" _X_; "4" __; "5" __; "6" __; "7" __; "8" __; 9" __.

1.5. A. "Weakness" __; B. "Threat" _X_.
Equal importance ————————▶ Extremely dominant importance
"1" __; "2" __; "3" _X_; "4" __; "5" __; "6" __; "7" __; "8" __; 9" __.

1.6. A. "Opportunity" __; B. "Threat" _X_.
Equal importance ————————▶ Extremely dominant importance
"1" __; "2" __; "3" __; "4" __; "5" _X_; "6" __; "7" __; "8" __; 9" __.