GAP: A Study on Strategic Derivation Approach Using Perceptual Difference*

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Abstract

Purpose – The purpose of this study is to provide a formalized process of decision making for companies or organizations that need to make various decisions in the age of uncertainty. Therefore, this study aimed to proposes a strategic decision-making approach citing the relatively easily accessible using IPA(important-performance analysis) and SWOT/AHP analysis.

Research design, data, and methodology - To be specific, the first step is to derive necessary attributes and conduct IPA. The second step is to subdivide the IPA results into internal strength and weakness factors and the external opportunity and threat factors, hierarchize those factors, and weight them accordingly. The third step is to build a causality model to propose a method of supporting a rational decision making.

Results - The foregoing approach seems to facilitate the diversification of decision-making strategies by helping businesses or organizations to measure and analyze the attributes needed for certain decisions. Additionally, the perceived importance and satisfaction (or achievement) usage of those derived attributes can be used as the reference data for SWOT/AHP analysis.

Conclusions – The proposed stepwise approach is applicable to businesses or organizations in need of making stepwise decisions in line with their retained competencies in comparison to conventional or intuitive decision-making practices.

Keywords: Research Methodology, Respondent, Perceptual Difference, Strategy Derivation, IPA(Important-Performance Analysis).

JEL Classifications: D23, D30, D70, L10, M10.

1. Introduction

Not only companies established for profit but also many other types of organizations are required to make a range of strategic decisions in order to stay responsive to changing business environment and achieve competitive advantages.

Decision making is germane to diverse purposes such as market leadership and organizational goal attainment. In the same vein, a plethora of theories and approaches relevant to strategic decision making, and the effectiveness thereof, have been well-documented in many disciplines.

For example, a corporate strategic decision, say, on M&A increases the value of the acquiring company in the short term (Jaju, Joiner, & Reddy, 2006) and thus its return on investment but its post-acquisition profit declines in the medium term (Laabs & Schiereck, 2010), or the impact of an M&A decision on brand equity varies across decision makers (Mahajan, Sharma, & Buzzell, 1994). As another instance of decision making, corporate exit strategies including reorganizing or restructuring proved to exert medium-to-long-term effects as long as multiple conditions for the growth of corporate value were met (Blatz, Kraus, & Haghani, 2006). Meanwhile, corporate branding strategies were reported to influence corporate value (Srinivasan & Hanssens, 2009), while corporate rebranding elevated overall corporate value (Lambkin & Muzellec, 2010; Oh, Nam, &

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Park, 2003).

Complex theories on decision making emerged as well. For example, game theory presented as a rational decision making theory in reality is a rational behavioral theory exploring one's strategic rational behavior determined based on his/her prediction or expectation of the other party's behavior in an inter-dependent situation, or an ordinary game situation, where both parties' behaviors impact on each other (Kim, 2013). Game theory is also associated with other theories such as the expected utility theory (Von Neumann & Morgenstein, 1947) and Nash equilibrium (Mailath, 1998), and used as a theory concerned with decision making in multiple disciplines not just in economics. Likewise, many empirical studies verified the reliability and validity of each question item on corporate decision making, operationalized variables, and tested the causality, moderation and mediation based on the aggregated mean of variables to corroborate the statistical significance of their results.

This paper concerns a more intuitive and convenient method of deriving corporate or organizational strategic decisions on the grounds that modelling a complex mathematical process or any empirical analysis of causality incurs excessive costs and requires specialized knowledge in variable settings. Moreover, limitations inherent in the findings derived from such modelling and empirical analysis preclude their generalizability and hinder technically inferior small organizations or businesses from eliciting some clues necessary for making strategic decisions. Thus, this paper proposes a strategic decision-making approach citing the relatively easily accessible IPA (important-performance analysis) and SWOT/AHP analysis. To be specific, the step 1 is to derive necessary attributes and conduct IPA. The step 2 is to subdivide the IPA results into internal strength and weakness factors and the external opportunity and threat factors, hierarchize those factors, and weight them accordingly. Step 3 is to build a causality model to propose a method of supporting a rational decision making.

The foregoing approach seems to facilitate the diversification of decision-making strategies by helping businesses or organizations to measure and analyze the attributes needed for certain decisions and the perceived importance and satisfaction (or achievement) and to use those derived attributes as the reference data for SWOT/AHP analysis. Also, the proposed approach is easily applicable to stepwise analyses and is expected to serve as a selective decision-making option in line with retained competencies.

2. Theoretical Background

2.1. IPA(important-performance analysis)

Originally suggested by Martilla and James (1977), IPA is a method of evaluation by comparatively analyzing the relative importance and achievement of each attribute based on a multi-attribute model (Song & Kim, 2012). IPA subdivides the factors related to respondents' perception into importance and achievement (or satisfaction) and comparatively analyzes the importance and achievement of each attribute, so as to determine the levels of importance and achievement (satisfaction) perceived by respondents (Martilla & James, 1977).

As described in Park, Kim and Yang (2015) and Yang, Kwon, and Kim (2014), both importance and achievement are high in the first quadrant in <Figure 1>, which indicates organizations should not spare efforts for their performance relevant to the attributes. The second quadrant shows the achievement is lower than the importance, which means as suggested by Oliver (1980)'s expectancy-performance disconfirmation theory, the outcome fails to meet the expectancy, likely leading to dissatisfaction. That is to say, the attributes in the second quadrant may well be perceived as vulnerable and requires intensive management and efforts for improvement. The attributes in the third quadrant are low in priority, which suggests organizations need not increase their efforts above current levels. Yet, as these attributes may turn into threats depending on any change in environment, organizations should continue to monitor those attributes. Finally, the attributes in the fourth quadrant are subject to overinvestment. Therefore, these attributes require organizations to consider efficiency and decide whether to reduce or redirect their efforts. For the reference points of an IPA matrix schema, mean or median importance and achievement may be used, whilst SD (standard deviation) or other methods are available (Song & Kim, 2012).
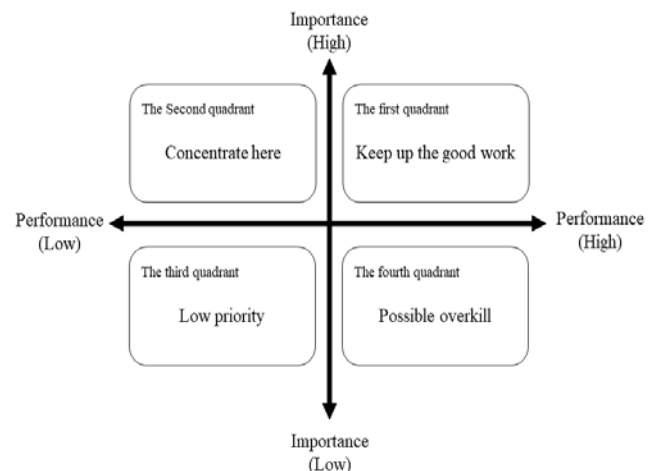
<Figure 1> Matrix of Important-performance analysis

2.2. SWOT/AHP Analysis

Used in a wide range of areas including marketing, SWOT analysis simultaneously structurizes internal and external business situations. Specifically, involving an

extensive diagnosis of causality and a systematic conception of components associated with new products, services, technologies, management or planning, SWOT analysis is widely used in relation to strategic planning (Son, 2011). Particularly, SWOT analysis enables business organizations to sub-divide their internal factors into strengths and weaknesses, and their external factors into opportunities and threats as part of their decision making, and thus to compare businesses with their environment (Kotler, 1994; Smith, 1999; Weihrich, 1982). Hence, facing uncontrollable uncertain external environment, businesses or organizations may rely on SWOT analysis to identify opportunities and avoid threats, while at the same time they may analyze their internal factors in view of their current external conditions to derive strategies for carrying out projects (Lee, 2014). However, despite a multitude of merits, SWOT analysis hardly measures the importance of each factor, and cannot fully determine the relative impacts of a factor in comparison to those of other factors (Pesonen, Kurttila, Kangas, Kajanus, & Heinonen, 2001). That is, SWOT analysis fails to provide accurate data needed for an efficient resource allotment by making corporate decisions on derived strategies. To address the foregoing challenges, AHP (Analytic Hierarchy Process) is used (Ananda & Herath, 2003; Basak & Saaty, 1993; Kurtila, Pesonen, Kangas, & Kajanus, 2000; Saaty & Vergas, 2012; Wind, 1987; Zahedi, 1986).

AHP is a decision-making approach to derive raters' knowledge, experience and intuition through a pair-wise comparison between the components constituting a hierarchical decision-making structure (Son, 2011), where four axioms should be considered (Vargas, 1990). First, according to the axiom of reciprocal, it must be possible to compare two objects and to represent their extent of importance, which must meet a reciprocal condition. Second, according to the axiom of homogeneity, the extent of importance must comply with some criteria represented by means of pre-set measures within a limited scope. Third, according to the axiom of independence, the attributes of same-level factors, whose relative importance is to be tested,

must not be interrelated. Finally, according to the axiom of expectation, a hierarchical structure must be complete and conform to a reasonable expectation for decision making.

Therefore, when every attribute is prioritized based on the weight elicited by combining the attributes derived from SWOT analysis in AHP, the limitations of SWOT analysis can be rectified to some extent, which will enable an efficient resource allotment based on the priorities of decisions facing businesses (Song, 2007).

3. Suggestion of Strategy Derivation Approach

As aforementioned, this paper makes use of IPA and SWOT/AHP analysis to propose a method of deriving strategies conducive to rational decision making for small businesses or organizations. The proposed approach to deriving strategies is comprised of three steps including preparation, which facilitates the use of corporate analytic competencies as needed. <Figure 2> shows the specific steps.

3.1. Preparation Level

In case businesses need to make decisions in relation to developing advertisement strategies prior to launching a new product or laying a foundation for security, it is necessary to derive relevant attributes. For example, when it comes to brand equity, brand awareness, brand association, perceived quality and brand loyalty are measured as suggested by Aaker(1991). Usually, variables reported in literature or previous studies are used. By contrast, when it comes to the proposed approach, it is advisable to utilize an FGI (Focus Group Interview) with experts or Delphi method to determine the perception of derived attributes among stakeholders such as consumers. That is because it would be much more effective to reflect the perspectives of those who are likely to be affected by the results of decisions in practice, although the attributes suggested by diverse studies have important meanings.
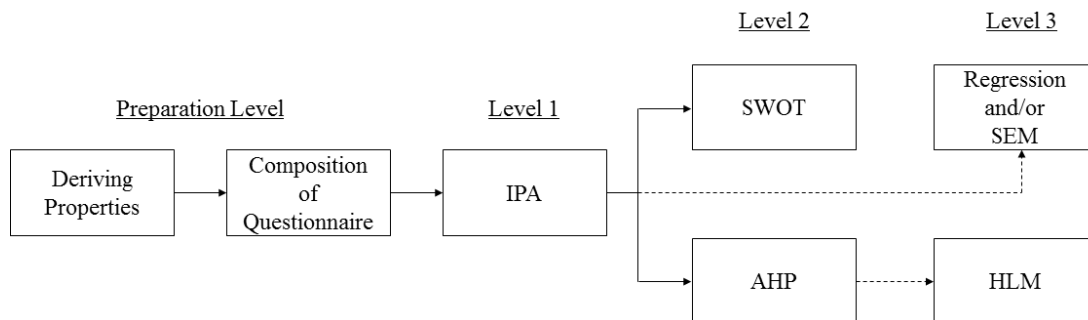
Note: The dotted arrow indicates a path for quantitative analysis. HLM: hierarchial linear modeling.

<Figure 2> Strategy Derivation Process

Regarding the attributes derived, identical question items should be presented to inquire about their importance and satisfaction (or achievement) like the questionnaire items usually found in IPA. Notably, each question item should be designed in compliance with the four axioms of reciprocal, homogeneity, independence and expectation, to allow for subsequent AHP analysis.

The importance and satisfaction may be adapted into different constructs such as the difference in perceptions between groups of interest. For instance, when questioning the importance of PB and NB products simultaneously, and linking the importance with the importance of PB while linking the satisfaction with the importance of NB, it is possible to determine the difference in the importance of the two products, which may in turn be applied in diverse forms such as the difference in perceptions of performance-based rewards.

3.2. Level 1: Important-performance analysis

As mentioned in the section on theoretical background, the step 1 should establish the statistical significance with the paired samples t-test of identical questions on the importance and satisfaction (or achievement) of each attribute or on decision-making attributes of interest. Subsequently, it is possible to conduct the IPA of the attributes, schematize (or tabulate) a matrix of each attribute as presented in <Figure 1>, and derive decision-making options relative to each quadrant. Practical studies using IPA are as follows. In the case of Park et al. (2015), the importance and satisfaction of the 25 HMR attributes derived through FGI were measured for food and nutrition students and analyzed by PCA for the final 7 variables. As a result, the first quadrant with the highest importance and performance was the period of circulation. And in the second quadrant with the higher the importance but the lower the performance, which was the improvement factors were price & capacity, safety and product quality. In addition, the third quadrant(low priority area) with low importance and performance was the manufacturing & processing and eco-friendly, respectively. The forth quadrant (possible overkill area) with low importance but higher performance was brand awareness and sales & distribution (Park et al., 2015). They suggested that HMR producers and distributors should develop various strategies to improve the price and capacity, safety and product quality in the second quadrant, and to strengthen the period of circulation in the first quadrant. Yang, Kim, and Kim (2016) compared between student and general customer for the importance and satisfaction of product attributes to HMR using the 25 selected attributes presented by Park et al. (2015). As shown in <Table 1>, because of college students and consumers have different perceptions, they suggested that different marketing strategies should be applied to younger consumers such as college students and general consumers.

<Table 1> Results of comparison between groups

Division	Student	Consumer
Quadrant 1	Flavor Cooking Method Date of Manufacture Expiration Date Safety Texture of Food	Cooking Method Date of Manufacture Expiration Date Safety Keep After Purchase
Quadrant 2	Food Additive Status Freshness Volume Price Main Raw Material Product Quality Processing Methods	Nutrient Content Flavor Food Additive Status Freshness Country of Origin Price Main Raw Material Product Quality Processing Methods Texture of Food
Quadrant 3	Nutrient Content Country of Origin Eco-friendly Material Eco Certification Production Method Distribution Channels	Volume Eco-friendly Material Eco Certification Production Method Manufacturer Awareness
Quadrant 4	Brand Packaging Manufacturer Awareness Cooking Time Keep After Purchase Purchase Location	Brand Packaging Cooking Time Purchase Location Distribution Channels

Meanwhile, Kim, Yang, Kim, and Yang (2017) in relation to employee compensation suggested that direct/indirect compensation factors and economic/non-economic compensation factors could be separated through IPA and strategies for performance compensation could be derived. In addition, many studies (e.g., Jung, Ha, & Yoon, 2009; Lee, Park, & Sun, 2015; Yang et al., 2014) have provided clues to establish various strategies using IPA.

3.3. Level 2: SWOT/AHP Analysis

The area of significant meaning in this study is the second stage. This is because it is expected that the qualitative analysis will be possible by converting the quantitative data in the second step. Level 2 involves the staff in charge, who derive internally performed factors as the corporate strengths from the attributes in the first quadrant for SWOT analysis, and also derive internally addressable factors as the corporate weaknesses from the attributes in the second quadrant. From the third and fourth quadrants, they may derive factors reflecting opportunities and threats in reference to changing external business environment, and thus to prepare for SWOT analysis. SWOT analysis is applicable to decision making in terms of S-O strategy (application strategy) for using strengths as opportunities, S-T strategy (response strategy) for offsetting

threats with strengths, W-O strategy (exploration strategy) for seeking opportunities while reducing weaknesses, and finally W-T strategy(avoidance strategy) for avoiding weaknesses and threats.

In the case of Park et al. (2015) in the previous example, the period of circulation located in the first quadrant can be utilized as its own strength if it is the same as that of existing HMR production and distributors themselves. In the case of price & capacity, safety and product quality, it can be used as a weakness of the company by the same judgment. On the other hand, the variables of the third and fourth quarters can be combined with strengths or weaknesses by their own judgment. Through this process, it is possible to analyze the environmental factors of the HMR company after deriving its strengths and weaknesses, and to analyze the SWOT if it includes opportunities and threats. In the case of the HMR market, the decrease in the number of households, population aging, and the advancement of women into society(Kim, Song, & Park, 2005; Kim, Kwon, & Shim, 2007), as well as increase in national income, various leisure activities, and various concepts of consumption culture(Lee, Park, & Cho, 2011) as opportunity factors. The decrease in consumption due to depression, and the consumer disconnection for instant food as threat factors, we can be constructed as the basic frame for SWOT analysis as follows.

In the example of <Table 2> above, the strengths and weaknesses are briefly presented because Park et al. (2105) parameterized each attribute. However, in Yang et al. (2016), HMR production and distribution companies can derive more sophisticated strategies because they use IPA results for each attribute (see <Table 1>).

AHP requires rather complex preliminary arrangements including the questionnaire building and a relatively complicated analysis process. Particularly, question items need be composed in a way that allows the pair-wise comparison between identical items. Most of all, among the aforementioned four axioms, according to the axiom of reciprocal, the design must allow an interpretation that a variable B is 1/X times as important as another variable A, when the A is perceived as more important than B by X times (Son, 2011). Also, in AHP, when one rates the importance of each component relative to the other component, it is necessary to calculate the C.R. (consistency ratio), which is used to measure the errors in each respondent's ratings, so as to analyze the reliability. As a rule, a smaller C.R. suggests a pair-wise comparison has been performed. A C.R. of 0.1 and under indicates a reasonable consistency, while a C.R. of 0.2 and under means an acceptable consistency, whereas a C.R. of 0.2 and over shows a lack of consistency (Basak & Saaty, 1993: Saaty & Vargas, 2012).

Kurttila et al.(2000) assert that the weights derived from the pair-wise comparison in AHP can be used to prioritize the factors that decision makers want to measure, and suggest a 3-step SWOT-AHP analysis. The step 1 determines potential SWOT attributes relevant to proposed strategies or decisions. The step 2 hierarchizes the priority of each component for the pair-wise comparison between the factors in each SWOT group, uses the eiegenvalue of each component for calculation and conducts the pair-wise comparison in each attribute group of SWOT to derive the value of the highest priority component(Son, 2011). Thus, in the step 2 intended for the approach to deriving strategies, it is important to determine the distinct attributes of each factor of SWOT from the perspective of staff in charge and to use the C.R. derived from the factors designed in the step 1 for the pair-wise comparison in AHP, for weighting and prioritization.

Yet, given the purpose of this paper, it is necessary to adapt the approach to AHP. That is, the approach need be modified to allow a more intuitive and easy analysis. Thus, it is advisable to dichotomize the hierarchy of interest into, say, individual-corporate levels or primary-secondary attributes. This dichotomic classification is expected to suggest some options for businesses to invest their resources at individual- or corporate-levels.
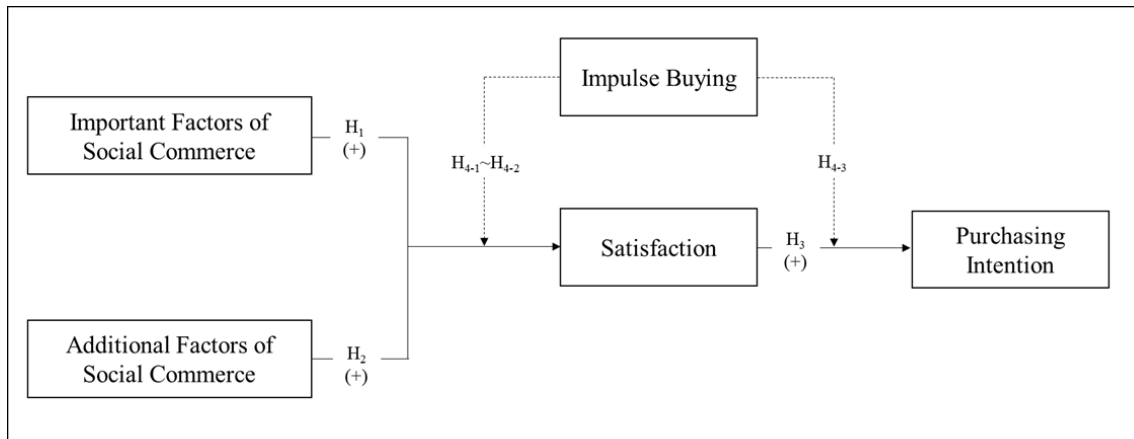
<Table 2> Example of SWOT analysis frame for HMR

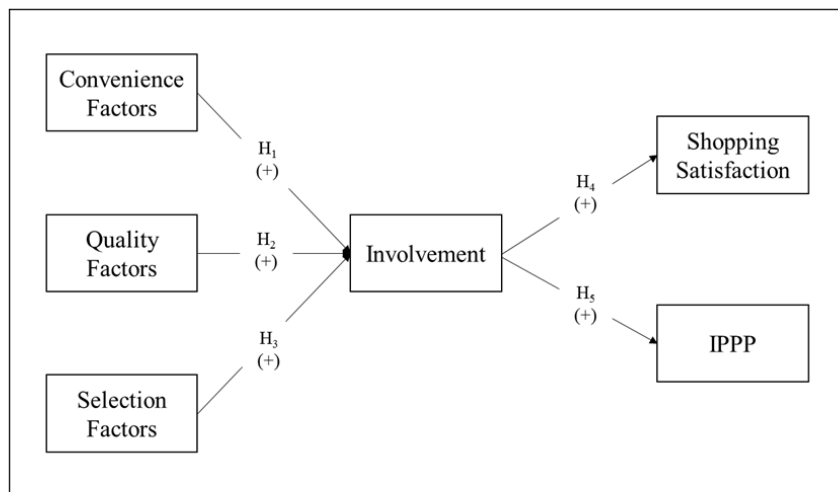| SWOT Analysis Framework		Opportunity	Threat
		• Decrease in the number of households • Population Aging • Women's social advancement • Increase in national income • Various Leisure activities • Consumption culture of various concepts	• Reduced consumption due to depression • Consumer externality for instant foods
Strength	• period of circulation • .... etc.	S-O strategies (application strategy)	S-T strategies (response strategy)
Weakness	• price & capacity • safety • product quality	W-O strategies (exploration strategy)	W-T strategies (avoidance strategy)

3.4. Level 3: Analysis of causality through quantitative values

The step 3 analyzes the causality using the quantitative values by combining the data used in the IPA in step 2 with the hierarchies based on AHP. For example, for regression analysis or SEM (Structural Equation Modeling) analysis, it is possible to use IPA for PCA (principal component analysis) of each attribute's importance or satisfaction, conceptualize the attributes as variables, and model the causality with dependent variables in order to determine the effects of the attributes on the dependent variables of interest. Certainly, the preliminary analysis of reliability, validity and correlation is a prerequisite for this process.

Recently, Yang and Cho (2017) presented in an international conference that a causal analysis of the effects of the importance factor of social commerce users on satisfaction and purchase intention using this method (see <Figure 3 (a)>). Ju and Yang (2017) also reported the results of the causality analysis on the effect of HMR selection attributes on shopping satisfaction and premium price intention through the same procedure (see <Figure 3 (b)>). This result implies that the causal model can be constructed and analyzed using the variables extracted through the IPA in the second level. However, to construct a causal model, selection and measurement of dependent variables, and selection and measurement of mediating or moderating variables should be done at the same time.

(a)

(b)

Note: (a) is quoted in Yang & Cho(2017), and (b) is quoted in Ju & Yang(2017).

<Figure 3> Example of causal model using variables derived from IPA

Also, it is possible to analyze the AHP-based hierarchies using HLM (Hierarchical Linear Model), which can analyze nested or hierarchical data (Son, Chung, & Joo, 2013). HLM is also known as multi-level, random coefficient and slop as outcome models(Raudenbush & Bryk, 2002), and may possibly reduce aggregated individual attributes to organizational attributes or translate individual acts as the consequence of organizational attributes, for the analysis of inter-related multi-level variables(Son et al., 2013). Also, in that it is generally used to analyze simultaneously aggregated individual-level and group-level regression functions within the model, and to consider the effects of interactions per level, HLM can analyze both macroscopic and microscopic effects at the same time (Park, Park, & Kim, 2008). Therefore, when one sub-divides the attributes defined in IPA and SWOT into individual-level and organizational-level (or corporate-level) attributes, it is possible to use HLM to analyze diverse causalities and to derive their interactions.

4. Conclusion and Expected Effect

The purpose of this study is to provide a formalized process of decision making for companies or organizations that need to make various decisions in the age of uncertainty. This is because empirical analysis through modeling through causal relationships or causal relationship analysis is not only costly, but also requires expert knowledge. And because companies and organizations have to pay a huge cost for the manpower needed to perform this process. In general, the existing structured decision-making process can not guarantee effectiveness if it does not fit the company or organization, or if it is not appropriate for the situation, it can not exclude the possibility of worsening the situation. Moreover, the complexity of existing decision-making techniques is inevitable for small organizations or small businesses with technological limitations to draw clues to strategic decision-making.

In order to solve these problems, this paper proposes an approach to strategic decision making with reference to IPA (important-performance analysis) and SWOT/AHP as a decision-making option for small businesses or organizations. Furthermore, this paper elucidates a process of using the proposed approach to build a causality model for analysis for the benefit of businesses and researchers seeking for more effective analysis methods. The rationale behind the proposed method is the limited generalizability of diverse variables previously documented or reported, and an a priori need for a viable approach to addressing the challenges against corporate or organizational decision-making settings.

This approach can be summarized as follows: First, in preparation, It is necessary to derive the attributes derived from experts using Focus Group Interview (FGI) or Delphi technique. In addition, these derived attributes should be able to ask the same questions about importance and satisfaction (or degree of achievement) as the questionnaire items usually presented in IPA. At this point, each question item should be designed in compliance with the four axioms of reciprocal, homogeneity, independence and expectation, to allow for subsequent AHP analysis. Second, in the first level, we should first check the statistical significance by performing a paired sample t-test on the importance and satisfaction (or degree of achievement) of each property or the result of the same question about the desired decision attributes. In addition, the IPA of the attribute can be intuitively solved by constructing a matrix for each attribute with a figure (or table) as shown in <Figure 1>, and deriving a solution for decision making according to each quadrant. Third, in the case of the second level, we can positioned that the strengths of the first quadrant (maintenance and strengthening area) and the weakness of the second quadrant (emergency improvement area), and dividing the external situation in which the problem occurs into opportunities and threats. It can be derived various strategies using SWOT analysis. This is a meaningful transformation that makes it possible to conduct qualitative analysis using quantitative data. In the case of AHP presented in this study, it is necessary to establish and classify twin items. However, since the analysis according to this may be somewhat difficult, it is suggested that the general enterprise should limit the target level to a duality such as individual-organizational level or self-other level. Fourth, we proposed a causality analysis using the quantitative values measured in conjunction with the data used in the IPA in the second level and the hierarchy that used AHP in the third level. For example, in the case of regression analysis or SEM (Structural Equation Modeling) analysis, principal components analysis is performed on the importance or satisfaction of each property in IPA, and the effect on the target dependent variable can be confirmed after constructing the attributes as variables and constructing the causal relationship model with dependent variables. Therefore, simultaneous measurement of the precise dependent variables, mediating variables and moderating variables that the firm or organization ultimately aims to achieve, and it must be preceded by a preliminary procedure for analysis such as reliability, validity, and correlation analysis. On the other hand, the hierarchical classification result using AHP was expected to be able to be analyzed through Hierarchical Linear Model (HLM).

The proposed stepwise approach is applicable to businesses or organizations in need of making stepwise decisions in line with their retained competencies, which will add to the effectiveness of their decision making in comparison to conventional or intuitive decision-making practices. In addition, the proposed method will enable researchers to analyze data more scientifically and quantitatively and thus to derive diverse implications in the context of certain businesses or conditions. Lastly, the

findings on the attributes derived in this paper combined with qualitative data will contribute to some situational analyses, increasing the efficiency and effectiveness of decision making.

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