The Application of an Innovative Marketing Strategy MADM Model—SIVA-Need: A Case Study of Apple Company

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ABSTRACT

A review of studies on marketing strategies during the past thirty years has indicated a lack of consistent evaluation of corporate marketing strategies due to the unavailability of a standard multiple attribute decision making (MADM) model of marketing strategy. Drawing on the SIVA marketing mix and Maslow's hierarchy of needs, this study first generated latent attributes classification references through conceptualization, and established a validated classification matrix based on the data obtained through nominal group techniques (NGT) with 7 experts. With a reliability of 0.95, the resulting classification matrix contained 4 dimensions and 20 attributes, which were then used to develop an MADM model of marketing strategy—"SIVA-Need"— which seeks to probe deeply into customers' thinking. Based on the SIVA-Need model, this study designed a questionnaire, which was administered to heavy users of Apple products. A total number of 326 valid questionnaires were collected. Analyses of weights obtained through Consistent Fuzzy Linguistic Preferences Relations (CFLPR) suggested that "brand community value" was the crucial attribute, as it ranked highest (0.0631) among the 20 attributes. However, "brand community value" was found to have the biggest performance gap (1.50) while "product benefit" had the best performance (0.235). The 4 dimensions and 20 attributes of SIVA-Need model may provide more valuable information for future studies and a consistent evaluation model for companies to conduct extensive marketing strategy selection. The results of this study suggested that Apple should invest more resources in the improvement of "brand community value" to create more satisfied and repeat-purchase customers.

1. INTRODUCTION

Marketing thinking was chiefly company-focused before the middle of the 20th century. Since that time, marketing thinking has shifted to a customer-focused perspective [1], and customers have been deemed a potentially valuable resource in the resource-based views of the firm [e.g., 2, 3]. Empirical studies have provided evidences for the positive influence of a customer-focused perspective on performance [e.g., 4, 5]. Gligor, et al. [6] has also shown the positive effects of adopting a customer-focused perspective of supply chains on performance. Since the middle of the 20th century, the customer-focused perspective has received extensive research and attention, and its impact on corporate performance has been supported empirically.

It is well known that the quality of a marketing strategy affects the performance of a company. The availability of a strategy evaluation model is critical in terms of determining the suitability of selected marketing strategies. For the past three decades, there have been extensive studies on marketing strategies. These studies can be grouped into the following categories: 1. Studies developing a research framework on marketing strategies [e.g., 7-9]. 2. Studies examining the relationships of associated variables on marketing strategies [e.g., 10, 11-15]. 3. Studies exploring new concepts or ideas about marketing strategies [e.g., 16-18]. 4. Studies investigating how marketing strategies affect performance [e.g., 19-21]. 5. Other research, including studies offering marketing strategies planning for individual companies [22]; studies looking into how marketing strategies affect stakeholders [23]; studies examining the factors driving marketing reforms and their impact on international marketing strategies [24]; studies looking into the creative strategies of social media [25]; and studies examining the external and internal factors that affect international marketing strategies [26]. Most conceptual frameworks connected with marketing strategies have sought to investigate the causal relationships and correlations between variables, and only a small number of studies have employed multiple attribute decision making (MADM) models to explore the key attributes of marketing strategies. While the various aspects of these MADM models simultaneously contain elements of both customer-focused and company-focused perspectives [e.g., 27, 28], 21st century marketing thinking has already shifted from a company-focused outlook to a customer-focused perspective [1, 29], and a customer-focused orientation has become an important marketing strategy for many firms [30]. A MADM model for assessing the key attributes of marketing strategies must therefore have a fully customer-focused perspective. However, this study discovered that during the most recent 30 years, researchers have not proposed a standard MADM model for the evaluation of marketing strategies based on a customer-focused perspective. With the absence of a unitary and consistent basis for the evaluation of marketing strategies, the future of a company may be endangered if marketing managers make baseless judgements.

When facing challenges to their survival, humans must convert their needs and wants to concepts that can be communicated, and must express those concepts using language[31]. This study has found that a unified MADM model combining SIVA[29]

and a conceptualization of Maslow's hierarchy of needs [32] can fully represent the attributes of customers' needs and wants, and only a model of this type is fully compatible with a customer-focused perspective. Accordingly, this study chose a SIVA marketing mix intended to deepen customer thinking with Maslow's hierarchy of needs as its theoretical basis, and established the SIVA-Need MADM model for the evaluation of marketing strategies on this basis. This study further uses this model to evaluate key attributes able to enhance customer satisfaction, showing that it can be employed as a tool for the evaluation of marketing strategies' key attributes. With a unitary evaluation foundation, executives and managers may select their marketing strategies to improve business performance. To examine the applicability of the resulting model, this study also conducted a case study of the Apple company.

2. THEORETICAL BACKGROUND

2.1 Customer-focused

The customer-focused marketing process includes the collection, interpretation, analysis, and dissemination of customer information [33], and this process should ultimately have a positive effect on corporate performance [4-6]. Research on the customer-focused perspective during the past 30 years has obtained considerable knowledge verifying the effectiveness of this marketing outlook. For instance, it has been shown that communication has always been the basis of customer-focused marketing work, and the enhancement of interactivity can make communication an even more valuable element of marketing [34]. In addition, a customer-focused organizational structure has been shown to promote the "acquisition and dissemination of market information and the coordination of customer value," which implies that the shift from a market-oriented to a customer-focused organizational structure requires changes to a company's accounting and information systems and human resources management if it is to achieve optimal results [35]. Companies making the shift from product-orientated organizations to customer-focused organizations will find that this will enhance their sense of responsibility in customer relationships, improve their sharing of customer information, and make it easier for them to expand sales [36]. A customer-focused strategic environment will emphasize non-financial performance measures, which is because information concerning quality, flexibility, and reliability can enable managers to make better-informed decisions [37]. A greater degree of marketing exploration will weaken the relationship between marketing exploitation and customer-focused marketing capabilities, suggesting that a company should not attempt to maximize marketing exploration and marketing exploitation, because this will have a negative impact on its customer-focused marketing ability [38]. Use of a customer-focused approach to the selection of celebrity endorsers is better able to predict the success of the spokesperson marketing campaign than solely employing a product-centered approach [39]. Employees' process thinking will influence operational performance and customer-focused performance via the effect of process mapping and process standardization and improvement [40]. When a company simultaneously strives for high levels of customer-focused brand management capability (BMC) and customer relationship management (CRM), it can concurrently strengthen the relationship between its market orientation, marketing mix capability, and new product performance [41]. Customer-focused performance elements include a customer service orientation and quality oriented measures [42]. Furthermore, when the selection of sales

indicators is inconsistent with a customer-focused strategy, this may cause the company's sales to fall [43].

In summary, past research on a customer-focused orientation has explained the results of basic marketing work, organizational structure, marketing capabilities, use of endorsers, performance, market orientation-marketing mix capability-new product performance, and other organizational and marketing strategies. In addition, a customer-focused company must strive to satisfy customers' needs [44] and develop corporate activities in accordance with customers' needs [45] if it is to boost its operating performance, and this is the essence of marketing strategies [45]. However, this study found that only a few studies concerning customer-focused marketing strategies mentioned customers' needs; for instance, Rust [45] suggested that customer-focused management is the most effective means of boosting customer satisfaction and income, which is because insights concerning customers' needs and wants will typically pervade the organization from the bottom up. Wuyts, et al. [46] noted that customer-focused companies possess intrinsic motivation to satisfy customers' needs, but if customer support has been outsourced to an external service provider, this intrinsic motivation will be weakened; but if both the external service provider and its customer company are customer focused, they will be even more effective at satisfying customers' needs and enhancing customer satisfaction. Soliman, et al. [47] suggested that the widespread application of the concept of value network advocacy will cause customer-focused companies to pay greater attention to the development of adaptive networks supporting customers' needs. But while this minority of studies expressed how satisfying customers' needs and wants will boost customer satisfaction, they fail to provide any marketing strategy assessment models that can be used to measure the key attributes of customers' needs and wants. It is well known that, except when going out of their way to respond to a survey, customers seldom have opportunities to express their real wants and needs [48]. Because of this, when a company drafts marketing strategies, it must have a customer-focused MADM model developed on the basis of its customers' needs and wants, and must use this model to precisely gauge the key attributes of its customers' true needs and wants. Only marketing strategies drafted on the basis of the key attributes of customers' real needs and wants can effectively boost customer satisfaction and corporate performance.

2.2 Marketing strategy

Although scholars defined "marketing" in various ways, they hold similar opinions. Among all, the definition contributed by Association [49, p.1] is one of the earliest and friendly-quoted: "Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational objectives." Strategy is derived from an ancient Greek phrase ($\sigma\tau\rho\alpha\tau\eta\gamma\eta\mu\alpha$) , which is pronounced as *stratēgema* [50, p.653]. The word means an action, especially a planned action. Since the ancient times, strategies are used in the military. Xenophon in Athens first noticed the connections of strategies used in the military and in the business. Xenophon suggested that businessmen should allocate resources and organize activities effectively, just like the army, to obtain profits strategically. But not until the 20th century did Xenophon's analogy of marketing strategy get attention [51, p.31]. Marketing strategy is constructed. It is the center of the marketing, and the core principle of marketing implementation [18]. More importantly, empirical studies perfectly demonstrate that marketing strategies would affect performance. [e.g., 8, p1]. In sum, this study defined marketing

strategy as the systematic analysis, resources allocation, action planning, and performance evaluation, the four core principles, conducted by the corporations to gain profits. The evaluation and selection process of the four core principles requires well-designed models to provide fair measurements.

Most past research concerning marketing strategy models has focused on the conceptualization of marketing strategy making [e.g., 10, 52], the causal relationships and correlations between marketing strategy variables [e.g., 8, 10, 53, 54], the interactions between variables [55], and the optimization of marketing strategies [56]. In comparison, relatively few studies have used MADM models to investigate the key elements of marketing strategies. Analysis of these key elements can let companies know which elements they should improve as a first priority if they wish to ensure customer satisfaction [57, p458], which suggests the importance of this analysis. However, it appears that no studies have constructed fully customer-focused MADM models for use in the investigation of the key elements of marketing strategies, and the aspects of those few MADM models used for that purpose simultaneously embody both customer-focused and company-focused perspectives. For instance, in the research of Shafia, et al. [27], only the aspect of customer relationship management is based on a customer-focused perspective, while the balanced scorecard aspect is based on a company-focused outlook; in the research of Cahyadi [28], only the aspect of customer networking is consistent with a customer-focused perspective, while the aspects of innovation capabilities, managerial competency, human capital, and company reputation are based on a company-focused perspective. This study believes that, when drafting marketing strategies, an MADM model that is customer-focused and addresses the levels of customers' hierarchy of needs must be used to investigate the key elements of marketing strategies, which will ensure the precise measurement of customers' needs.

2.3 SIVA marketing mix

Whereas different scholars defined marketing mix differently, the general consensus indicated that marketing mix was part of marketing strategies [58, p.65]. Marketing mix is the fundamental structure of any marketing strategies as it connects strategies and marketing activities to guarantee the success of a product, a service, a brand, or a company in a target market [59, p13]. Despite multiple challenges and other models and instruments, the sustainability of the marketing mix after the diversity, changes, and updates it went through, proves its significant role in marketing strategies [59, p21]. Ever since McCarthy [60] proposed the 4Ps (product, price, place, promotion) marketing matrix, scholars have argued that the 4Ps marketing matrix was still mostly about the corporations [61, p.6-7]. As it contradicts to the customer-focused perspective advocated in marketing area, 4Ps marketing mix has received criticism from scholars, such as Lauterborn [62], Möller [63], Popovic [64], , Goi [65], and Festa, et al. [66]. Accordingly, Robert [67] adopted the customer-focused perspective and correspondingly developed the 4Cs (Customer needs ; Cost ; Convenience ; Communication) marketing mix.

Although the focus of marketing concept has already been shifted from 4Ps to 4Cs, from corporations to customers since the last century, the customer-focused 4Cs still fails to deep dive into customers' thinking by merely understanding customers' needs from corporations' perspective. Since the 21st century, with advanced technology and widespread use of internet, customers can learn the information of products and services through websites and social media. Moreover, customers can send messages to product

or service providers directly to express their needs. Newell [68] suggested that customers can dominate the trading process and communications with the autonomy given by technology. Dev and Schultz [29] argued that the dominant power no longer belongs to the manufacturers in the 4Ps agenda or the customers in the 4Cs scenario, but the "customer dominant", which implies that customers send out dominant demands. Only the customer dominant perspective could help deepen customer-focused marketing concept. Given that, Dev and Schultz [29] proposed the SIVA marketing mix to enhance the establishment of "customer dominant" marketing strategies as the new marketing concept in the 21st century. SIVA consists of four dimensions—solutions, information, value, and access. The goal of SIVA model is to create high customer satisfaction and retention.

SIVA marketing mix is aimed to show that corporations should identify and satisfy customers' needs and desires more precisely. Instead of focusing on products, corporations should develop and manage the solutions that customers need; should provide complete information instead of promotions; and make the solutions accessible to customers whenever they need [69, p.124]. The evolution of marketing mix from the seller-oriented 4Ps and customer-focused 4Cs to customer-dominant SIVA is shown in Figure 1.

SIVA has a solid theoretical basis [70], and is established on the basis of and supported by real marketing concepts. SIVA can help uncover customers' needs and wants, and can boost the profitability of a marketing organization [71]. When products or services are characterized in accordance with SIVA, this will place the focus on customers' needs, and also facilitate the definition of those marketing strategies that can be adopted by the enterprise[72]. A SIVA marketing mix can facilitate social marketing [69, 73], and can promote active, collaborative partnerships between marketing personnel and customers, which will yield even better value-in-use [69]. But in spite of the fact that research concerning SIVA has pointed out that it can facilitate the co-creation of value with customers because of its focus on customers' needs, and thereby boost customer satisfaction, what kinds of key attributes can enhance customer satisfaction? Past research on SIVA lacks any explanation of this aspect.

After reviewing the evolution of marketing mixes across different eras and examining the customer-dominant SIVA marketing mix, it is clear that a marketing strategy which could help improve corporate performance should treat the deepening into customer thinking as the key element. This study therefore chose to use a SIVA marketing mix that can deepen customer thinking, and combine that marketing mix with a theoretical framework of hierarchical human needs to develop a MADM model that can be used to develop marketing strategies, which will be used to evaluate key attributes able to boost customer satisfaction.
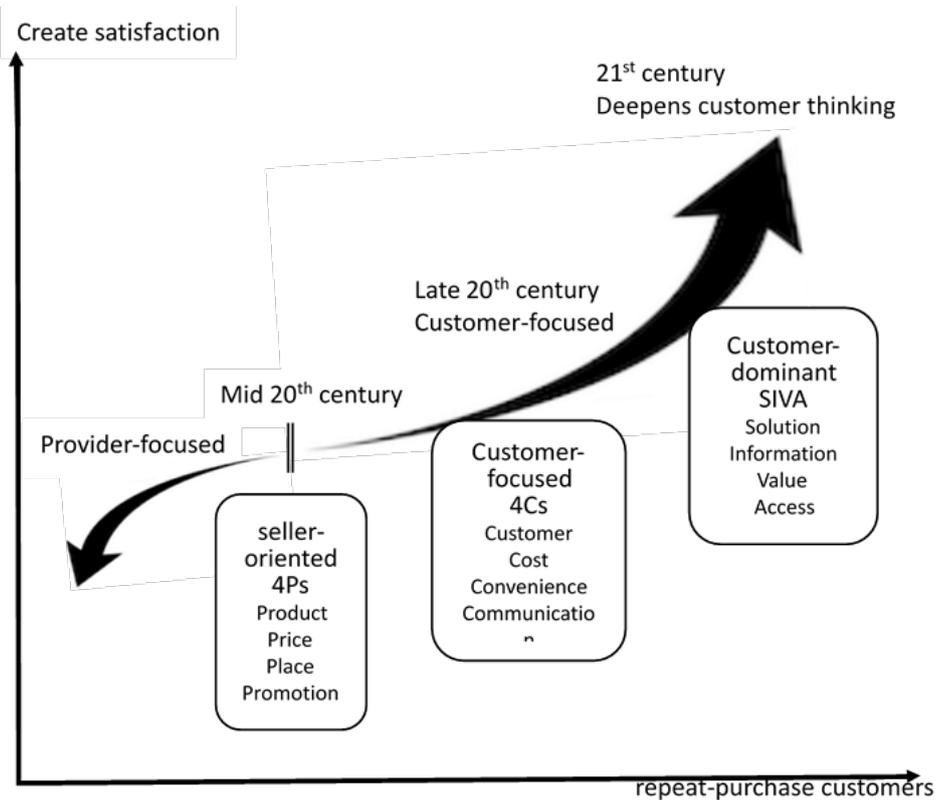
Figure 1. The evolution of marketing mix and marketing concept

2.4 Theories of needs

Regarding human needs, the frequently-used theories include Murray's psychogenic needs [74], Maslow's [32], Alderfer's ERG theory [75], and McClelland's Achievement Motivation Theory [76]. Murray's classifications of needs are extremely detailed. Its complexity may cause overlaps if it is used to match the attributes of each dimension in SIVA. In contrast, Maslow's is more systematic with clear hierarchies, and is often used as theoretical foundation. ERG and McClelland's Achievement Motivation Theory only roughly classified human needs into three categories. As the resulting attributes may fail to represent customer needs in all aspects should we choose the ERG or McClelland's theory to construct the dimensions of SIVA, this study adopted Maslow's as the transcendent theory, which was then applied to match the dimensions of SIVA marketing mix to construct the matrix and further conceptualize the attributes embedded in the intersection points on the matrix.

3. RESEARCH METHODS

According to the review of marketing strategy literature, we have learned that marketing concept should concentrate on deepening customer thinking. In order to create customer value and satisfy customer needs and desire, corporations should realize the "customer-dominant" perspective and pay more attention to the direct messages about needs sent by the customers. SIVA marketing mix fits into the above marketing concept. Nevertheless, marketing concept only adopts the principle ideas of the four dimensions (customer solution customer information, customer value, and customer access) from SIVA marketing mix. When executives and managers plan marketing strategies based on its marketing concept, there is no practical and complete

evaluation framework available. After the marketing strategies implemented, there is no concrete indicators to examine whether the strategies based on SIVA meet the goal—create satisfied repeat-purchase customers. Thus this study argued that each dimension of SIVA should contain several measurable attributes which fit into the corresponding dimension. By adding these attributes, SIVA could then become a complete and solid marketing strategy evaluation model, and the attributes in the model could then be used as indicators for goal-attainment. To achieve this, a transcendent theory about all human needs is required to link with dimensions of SIVA before developing a marketing strategy model containing indicators of customer needs. According to the literature review, Maslow's [32] is the most suitable candidate.

Maslow [32] hierarchy of needs seeks to explain human needs, from the most basic to the highest, and a SIVA marketing mix similarly seeks to explain how an enterprise should precisely identify and satisfy customers' needs and wants [69, p.124]. The core aspects of these two theories both emphasize human needs, and attributes developed by linking the individual aspects of the two theories are the "needs" attributes of customers at each level of the hierarchy of needs when engaging in consumer activities. These attributes can be used to construct comprehensive marketing strategy assessment models possessing both depth and breadth. Only a fully customer-focused marketing strategy MADM model of this type can identify customers' true inner needs and wants at each level of the hierarchy of needs.

Therefore, this study used the customer-centric SIVA marketing mix and connected it with Maslow's to establish a matrix (the dimensions of SIVA marketing mix is the longitudinal axis whilst Maslow's is the horizontal axis). Based on the matrix, this study correspondingly developed the matched attributes of SIVA dimensions. Needs at each hierarchy in Maslow's theory were used to conceptualize the attributes embedded in SIVA dimensions. Following this, nominal group technique (NGT) was applied to decide the most appropriate attributes of corresponding attributes in SIVA. An innovative marketing strategy MADM model which deepens customer thinking was then established, and was termed the SIVA-Need model.

3.1 Conceptualization of SIVA-Need latent attributes

After reviewing related studies, Peronard and Ballantyne [77, p2-3] suggested that: 「Conceptualization is an application of typology. Typology is used to establish construct validity and external validity. Methodologically speaking, the construction in typology relies on the identification of the different attributes that compose the overall structured entity. Therefore, attributes of a certain dimension should be homogeneous whereas heterogeneity between different attributes should be as high as possible [78]. Although in the past, typology was viewed as an overly simplified classification method, and too abstract to be used as a theory, it may reach the standard for proper theories after extensive development and explanations [79].」

Barsalou [80] argued that conceptualization is neither simple nor unstructured, but rather an analysis with systematic and rigorous processes. Under what condition is conceptualization a suitable analysis method? Hollebeek, et al. [81] suggested that conceptualization can be adopted based on the sufficient explanations of the dimensions and attributes used in the study following literature review and qualitative explorations. In brief, conceptualization is a rigorous systematic classification method. In specifics, after literature review and qualitative analysis, conceptualization classifies various

attributes into groups, which each corresponds to a particular concept identified by hypothetical categories and implications. Within groups, there are differences among attributes in a way that they are mutually exclusive. However, they are also homogeneous in a way that all these attributes belong to the same dimension. Give this classification method could establish logical connections between different phenomena in dealing with abstract concepts, it may benefit academic discussions and exploratory research.

This study followed the content and conditions mentioned above and conducts rigorous conceptualization analysis. Based on customer-focused perspective, this study conducted rigorous analysis and make inferences and then identified the potential background factors, incidents, and thinking needs with previous studies[1] and typology are utilized as the guidelines. Meanwhile, the classified attributes were created by connecting the dimensions of SIVA marketing mix to the aspects of Maslow's hierarchy of needs. The latent attributes at the intersections of longitudinal axis (SIVA marketing mix dimensions) and horizontal axis (Maslow's hierarchy of needs) were conceptualized. After authors voting for each attribute in the SIVA-Need latent attributes database anonymously without interferences, attributes without more than half of the votes are deleted. In the end, a SIVA-Need latent attributes classification matrix is generated (Table 1).

[1]A total of 1,012 articles from Web of Science, ScienceDirect, and Google Scholar were examined; these included 124 articles concerning basic needs, 92 concerning safety needs, 131 concerning social needs, 109 concerning esteem needs, 106 concerning self-actualization needs, 112 concerning customer solutions, 133 concerning customer information, 108 concerning customer value, and 97 concerning customer access.

The conceptualization method, used to analyze the implications at the liking points in order to obtain the latent attributes, is derived from the conceptualization and typology descriptions provided by Hoyer and MacInnis [78], MacInnis [82], and Peronard and Ballantyne [77]. Accordingly, the attributes at one particular intersection point are homogeneous with heterogeneity among them with the advantage of high construct and external validity without confusions inter-attribute.

Table 1. SIVA-Need Latent Attributes Classification Matrix

needs attributes SIVA	Physiological needs Basic needs*	Safety needs	Social needs	Esteem needs	Self-actualization
Customer solutions	1.amenity 2.convenience 3.pleasantness	1.commodity safety 2.reliability 3.certainty	1.affectivity 2.sociability 3.emotionality	1.sense of accomplishment 2.exclusiveness 3.applicability	1.personal style 2.customized
Customer information	1.transparency 2.intelligibility 3.completeness	1.information safety 2.traceability	1.communicability 2. online consultation	1.respect for diversity 2.privacy	1.completeness 2.sufficiency 3.uniqueness
Customer value	1.Usability 2.affordability 3.product benefits	1.dependability 2.psychological benefits	1.connectability 2. brand community value	1.exceptioness 2.sense of honor 3.dignity	1.personal value 2.perfection 3.integration
Customer access	1.efficiency 2.effectiveness 3.immediacy	1.friendliness 2.consumption safety 3.accuracy	1.serviceability 2.care ability 3.belongingness	1.courteous reception 2.warmth 3.initiativeness	1.autonomous consumption 2.actualization

* Physiological needs are defined as the needs to be satisfied through food, excretion, sleep, warmth, and sex. However in the market, commodities are not limited to the goods or services providing the above. Therefore, this study expanded the physiological needs to basic needs to cover various commodities.

3.2 Nominal group technique: ascertaining SIVA-Need latent attributes

Delbecq, et al. [83] indicated that NGT (Nominal group technique) has three characteristics: 1. In NGT group meeting, experts can offer their personal opinions without being interfered by the others. 2. In traditional group meeting, minority is often affected by the majority. However, each expert's opinions are deemed as equally important in NGT group meeting. 3. The effectiveness of group decision is usually better than individual decision. Other scholars also propose the advantages of NGT. For example, Ven and Delbecq [84] suggested that NGT may generate more unique ideas than Delphi method could. Roth, et al. [85] believed that NGT may bring out more quality thinking than Interacting groups could. In terms of research cost, Owen, Arnold et al. [86, p185] argued that NGT can generate data in short period of time, resulting in the advantage of low cost. Vander Laenen [87, p1] listed the advantages of NGT as the following: 1. Limiting the influence of researcher and other group members. 2. Increasing the likelihood of equal participation of all experts. 3. Generating the same level of impact on mutually contradictory beliefs and thinking. 4. As it is suitable for exploratory research, research may utilize this method to establish hypothesis on understudied questions. 5. It may help to collect and understand the thinking of populations socially or culturally different from the researcher. In the light of the characteristics and advantages above, and the potential subjective categorization bias created during attribute-establishment of SIVA marketing mix and Maslow's hierarchy of needs, this study adopted NGT to assure the objectivity and research quality.

The participants in the NGT were 7 university lecturers in Taiwan, who were not personally acquainted with each other. During the meeting, their opinions were anonymous by replacing their names with alphabets A, B, …G. By doing this, this study aimed to avoid the influence caused by interferences or interpersonal ties. The number of participants was in line with the suggested number—5-8—given by Delbecq, et al. [83]. Lakhani, et al. [88] also pointed out that a limited number of participants is essential in terms of giving each participant sufficient time, and respecting their opinions on the problems.

Among the participants, their academic expertise ranged from marketing management, consumer behavior, strategic management, and customer relationship management; age from 40 to 59; years of teaching from 9 to 20 years. This group of participants formed a representative sample in terms of their ages, academic expertise, and years of teaching. Moreover, their academic expertise was both different and complementary. Given that, they could provide extensive and accurate opinions on the attributes planned to be developed through the combination of dimensions in SIVA and aspects of Maslow's hierarchy of needs.

This study primarily followed the procedures proposed by Delbecq, et al. [83] with minor revisions to implement NGT. According to the NGT implementation procedure, it should be completed in one meeting. Nevertheless, sufficient time allows the participants to review the information and explanations, and to think and collect

relevant data. Furthermore, to assure zero interferences, each participant was given a SIVA-Need attributes classification matrix sheet to complete before stage two. This study revised the NGT procedure and divided it into two parts, i.e. before the meeting and after the meeting. Stage 1 and 2 carried out 2 weeks before the meeting whereas stage 3, 4, and 5 during the meeting. The implementation details are as follows.

Before the meeting:

Stage 1
Providing the complete information relevant to this study to all participants, explaining the objectives and research methods adopted by this study in details, and answering their questions.

Stage 2
Participants were asked to examine the attributes situated at the intersection points and circle the ones that match both SIVA dimensions and aspects of Maslow's most based on the SIVA-Need latent attributes classification matrix table. Other than circling the attributes on the pre-designed table, participants were also asked to fill more suitable latent attributes into a SIVA-Need attributes classification matrix sheet on their own. At this stage, participants completed the matrix table alone, which accordingly reduced the interferences caused by other participants to enhance the advantages of NGT.

During the meeting:

Stage 3
Each participant explained his or her decisions alternately on selecting and circling the attributes based on their finished SIVA-Need attributes classification matrix sheet and notes. To avoid mutual interferences or deliberate guidance, participants were advised against communicating, evaluations, or discussing with each other at this stage. The essence of this stage lay in that each participant offered detailed and through explanations on their finished SIVA-Need attributes classification table without mutual consultations. At this stage, three participants offered additional latent attributes for three intersection points in the matrix. Participant B suggested that "community information" corresponded to the intersection point of the customer information dimension and the aspect of social needs. Participant D suggested that "idealization" corresponded to the intersection point of the customer value dimension and the aspect of self-actualization. Participant E suggested that "accessibility" corresponded to the intersection point of the customer access dimension and the aspect of basic needs.

Stage 4
All of the participants discussed about the implications and appropriateness of attributes in SIVA-Need latent attributes classification matrix, and clarified the issues raised during discussions. The additional attributes provided by participants B, D, and E were also discussed. After discussions, more than of the participants agreed to include the three attributes into the SIVA-Need latent classification matrix table for the evaluation in the next stage.

Stage 5
Participants each conducted a final evaluation, graded, and ranked the attributes. Based on their evaluations, this study created a final rank (Table 2). The attributes

with the highest rank at their corresponding intersection points were then used to a concluding SIVA-Need attributes classification matrix table (Table 3).

Table 2. SIVA-Need Latent Attributes Ranking

SIVA	Basic needs	A	B	C	D	E	F	G	average	rank	Safety needs	A	B	C	D	E	F	G	average	rank
Customer solutions	amenity	1	3	3	3	2	3	2	2.4	1	commodity safety	3	3	2	3	3	3	2	2.7	1
	convenience	3	1	2	2	1	1	3	1.9	2	reliabilty	2	1	3	2	1	1	1	1.6	3
	pleasanteness	2	2	1	1	3	2	1	1.7	3	certainty	1	2	1	1	2	2	3	1.7	2
Customer information	transparency	3	2	3	2	3	3	1	2.4	1	information safety	2	1	2	2	1	2	2	1.7	1
	intelligibility	2	1	2	3	1	2	2	1.9	2	traceability	1	2	1	1	2	1	1	1.3	2
	completeness	1	3	1	1	2	1	3	1.7	3										
Customer value	usability	1	2	1	1	2	1	2	1.4	3	dependability	1	1	2	2	2	1	1	1.4	2
	affordability	3	1	2	2	1	2	1	1.7	2	psychological benefits	2	2	1	1	1	2	2	1.6	1
	product benefits	2	3	3	3	3	3	3	2.9	1										
Customer access	efficiency	4	3	1	3	3	3	4	3.0	1	friendliness	2	3	1	3	1	3	1	2.0	2
	effectiveness	1	1	2	1	4	1	3	1.9	4	consumption safety	3	2	3	1	3	2	2	2.3	1
	immediacy	3	2	3	2	1	4	1	2.3	3	accuracy	1	1	2	2	2	1	3	1.7	3
	●accessibility	2	4	4	4	2	2	2	2.9	2										

SIVA	Social needs	A	B	C	D	E	F	G	average	rank	Esteem needs	A	B	C	D	E	F	G	average	rank
Customer solutions	affectivity	2	3	2	2	1	3	2	2.1	2	sense of accomplishment	1	2	2	1	3	2	1	1.7	3
	sociability	3	2	1	3	3	1	3	2.3	1	exclusiveness	2	3	3	2	1	3	2	2.3	1
	emotionality	1	1	3	1	2	2	1	1.6	3	applicability	3	1	1	3	2	1	3	2.0	2
Customer information	communicability	1	2	1	1	3	1	1	1.4	3	respect for diversity	2	1	2	2	1	2	1	1.6	1
	online consultation	2	3	3	3	1	3	3	2.6	1	privacy	1	2	1	1	2	1	2	1.4	2
	★community information	3	1	2	2	2	2	2	2.0	2										
Customer value	connectability	2	1	1	1	1	1	1	1.1	2	exceptioness	1	2	2	1	1	1	2	1.4	3
	brand community value	1	2	2	2	2	2	2	1.9	1	sense of honor	3	3	1	3	2	3	3	2.6	1
											dignity	2	1	3	2	3	2	1	2.0	2
Customer access	serviceability	2	3	1	1	1	3	1	1.7	2	courteous reception	3	2	3	3	2	2	3	2.6	1
	care ability	1	1	2	2	2	1	2	1.6	3	warmth	1	3	1	2	1	1	1	1.4	3
	belongingness	3	2	3	3	3	2	3	2.7	1	initiativeness	2	1	2	1	3	3	2	2.0	2

SIVA	Self-actualization	A	B	C	D	E	F	G	average	rank
Customer solutions	personal style	2	1	2	2	1	2	1	1.6	1
	customized	1	2	1	1	2	1	2	1.4	2
Customer information	completeness	3	3	1	3	3	3	1	2.4	1
	sufficiency	1	1	2	1	1	1	2	1.3	3
	uniqueness	2	2	3	2	2	2	3	2.3	2
Customer value	personal value	4	4	4	3	4	3	4	3.7	1
	perfection	2	1	1	4	1	1	3	1.9	4
	integration	3	2	3	1	2	4	2	2.4	2
	▲idealization	1	3	2	2	3	2	1	2.0	3
Customer access	autonomous consumption	2	1	2	2	2	2	1	1.7	1
	actualization	1	2	1	1	1	1	2	1.3	2

Note: The alphabets A, B…G represent the expert participants respectively.

★Participant B suggested to include "community informatio".

▲Participant D suggested to include "idealization".

●Participant E suggested to include "accessibility".

Table 3. SIVA-Need Attributes Classification Matrix

needs attributes SIVA	Basic needs	Safety needs	Social needs	Esteem needs	Self-actualization
Customer solutions	Amenity	Commodity safety	Sociability	Exclusiveness	Personal style
Customer information	Transparency	Information safety	Online consultation	Respect for diversity	Completeness
Customer value	Product benefits	Psychological benefits	Brand community value	Sense of honor	Personal value
Customer access	efficiency	Consumption safety	belongingness	Courteous reception	Autonomous consumption

3.3 Reliability and validity

However rigorous the above NGT procedure was, some participants might change their attributes classification due to conformity after hearing the explanations of other participants on their SIVA-Need attributes classification matrix. The possible lack of confidence out of unlikeness might led to changes of grades when they were asked to provide final evaluations at stage 5. In order to avoid the collective bias caused ty conformity, which would affect the reliability and validity of SIVA-Need attributes classification matrix (Table 3), this study conducted content analysis on SIVA-Need attributes classification matrix. The reliability was derived from the gradings of 7 participants and 4 authors, which could help to verify the decision in NGT. The content analysis on SIVA-Need attributes classification matrix contained to steps:

Step 1
Grading the degree of consent on attributes.

Step 2
The resulting grades then went into the function. After calculations, reliability was generated.

Detailed descriptions of the above two steps are as follows.

Step 1
After NGT, the authors distributed an evaluation sheet to each participant. Participants were asked to give scores for the degree of consent on attributes in SIVA-Need attributes classification table; meanwhile, 4 authors also graded the attributes. Without discussions or interferences, participants and authors completed his or her own evaluation. After sorting the results, the content analysis result (Table 4) on SIVA-Need attributes classification matrix was then derived.

Table 4. The evaluation results on SIVA-Need attributes classification matrix

SIVA dimensions	SIVA-Need Attributes	Grade distribution based on the evaluations of 7 expert participants (E) and 4 authors (R)											
		Strongly disagree		disagree		Neither agree nor disagree		agree		Strongly agree		50% and more identical	
		-2		-1		0		+1		+2			
		E	R	E	R	E	R	E	R	E	R	E	R
customer solutions	Amenity							1		6	3	+2	+2
	Commodity safety							2	1	5	3	+2	+2
	sociability					1	1	2	2	4	1	+2	+1
	Exclusiveness						1	2	1	5	2	+2	+2
	Personal style							1	1	6	3	+2	+2
Customer information	Transparency							1	1	6	3	+2	+2
	Information safety								1	7	3	+2	+2
	Online consultation					1	1	2		4	3	+2	+2
	Respect for diversity					1		1	1	5	3	+2	+2
	Completeness							2	1	5	3	+2	+2
Customer value	Product benefits									7	4	+2	+2
	Psychological benefits									7	4	+2	+2
	Brand community value									7	4	+2	+2
	Sense of honor					1	1	2		6	1	+2	+1
	Personal value					1	1			6	3	+2	+2
Customer access	Efficiency							4	3	3	1	+1	+1
	Consumption safety							1	1	6	3	+2	+2
	Belongingness								1	7	3	+2	+2
	Courteous reception					1		1	1	5	3	+2	+2
	Autonomous consumption					1		2	1	4	3	+2	+2

Step 2

Based on Table 4, the reliability on SIVA-Need attributes classification matrix was calculated. The calculation method on content analysis was taken from Holsti [89]. The threshold of 50% and more similarity was applied on both the grading results of 7 participants (group 1 evaluators) and 4 authors (group 2 evaluators). The degree of agreement of the results that met the threshold was then calculated. Based on that, the reliability of SIVA-Need attributes classification matrix was derived. The calculation functions of the degree of agreement and reliability was as follows:

Function 1

$A = 2 \times X \div (Y_1 + Y_2)$

A = degree of mutual agreement

X = number of identical grades of two groups of evaluators

Y_1 = the supposed number of number for group1

Y_2 = the supposed number of agreements for group 2

Function 2

Reliability = n × A ÷ 〔1+(n−1) × A〕

n = number of evaluator groups

According to Table 4, there were 18 attributes that met the threshold of 50% and more similarity in group 1 and 2. They then went into the functions above, which generated the following results:

Function 1: A = 2 × 18 ÷ (20+20) = 0.9

Function 2: Reliability = 2 × 0.9 ÷ 〔1+(2−1)× 0.9〕 = 0.95

Based on the above two steps, the derived reliability of SIVA-Need attributes classification matrix was 0.95, which showed a high consistency among the grading results on the degree of consent on SIVA-Need attributes classification matrix (Table 3) evaluated by 7 participants and 4 authors. In respect of validity, all participants in NGT had a doctorate degree with the experiences of 9-20 years of teaching and worked as assistant, associate professors or professors in the university. Hence, this study inferred a high expert validity on SIVA-Need attributes classification matrix.

After conceptualization analysis and NGT, the 20 attributes in the SIVA-Need attributes classification matrix were determined. Following the reliability and validity tests, this study verified that 20 attributes in the matrix had high reliability and validity. This study then incorporated the definitions on marketing strategies discussed in the literature review. That is, systematic analysis, resources allocation, action planning, and performance evaluation, the four core principles, conducted by the corporations by corporations to gain profits. After incorporating the marketing strategy definition into SIVA-Need attributes classification matrix, it was transformed into SIVA-Need model (Figure 2).
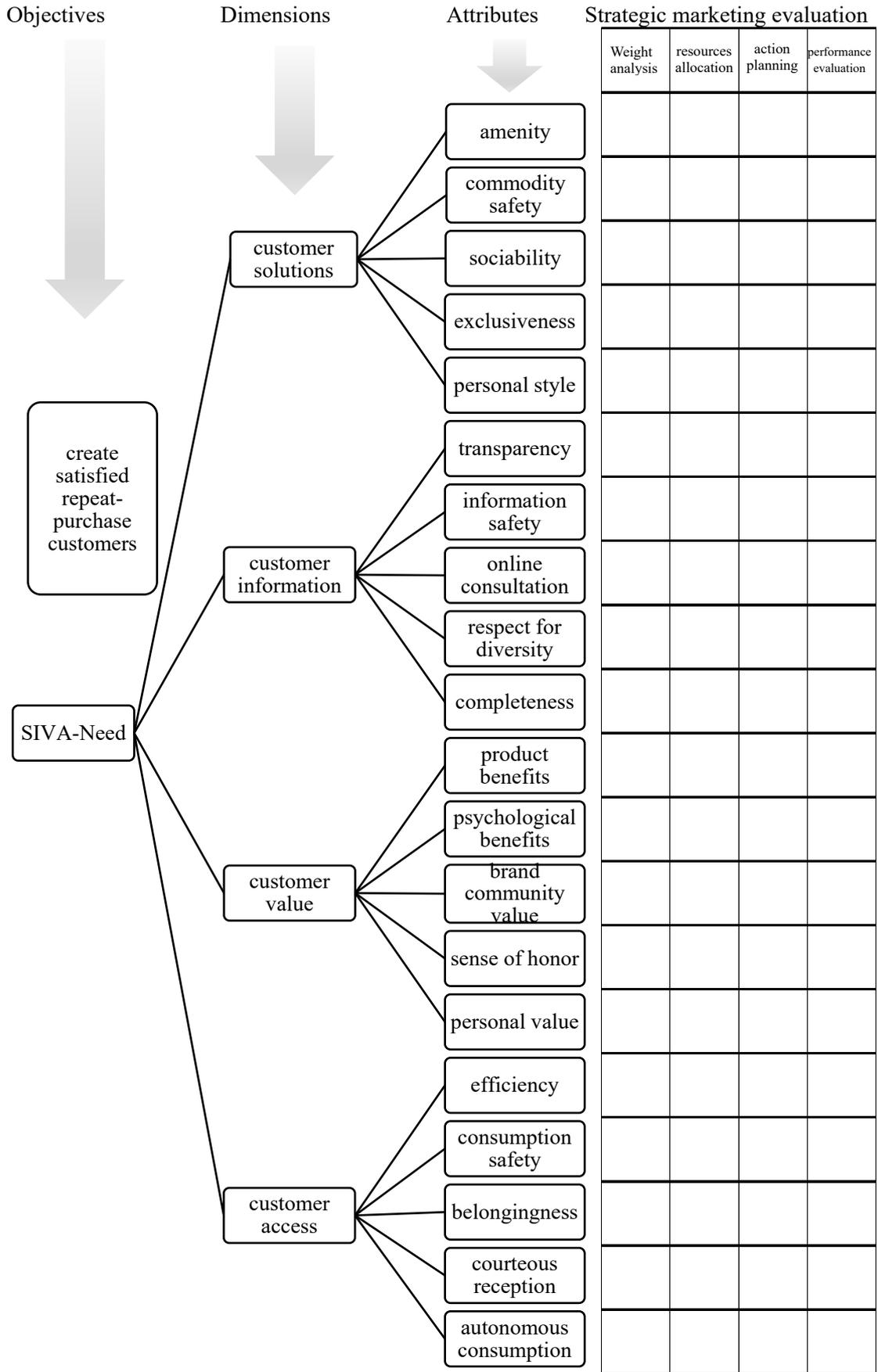
Objectives	Dimensions	Attributes	Strategic marketing evaluation			
			Weight analysis	resources allocation	action planning	performance evaluation

Figure 2. SIVA-Need Model

4. SIVA-NEED MODEL VALIDATION—AN EMPIRICAL STUDY ON APPLE COMPANY

"Turn the device you have into the one you want" was the open declaration in the Apple Trade In online (Figure 3). This shows that Apple company emphasizes on customers dominant marketing thinking, which corresponds with the customer-focused perspectives of SIVA marketing mix. This study thus chose Apple company for an empirical case study.
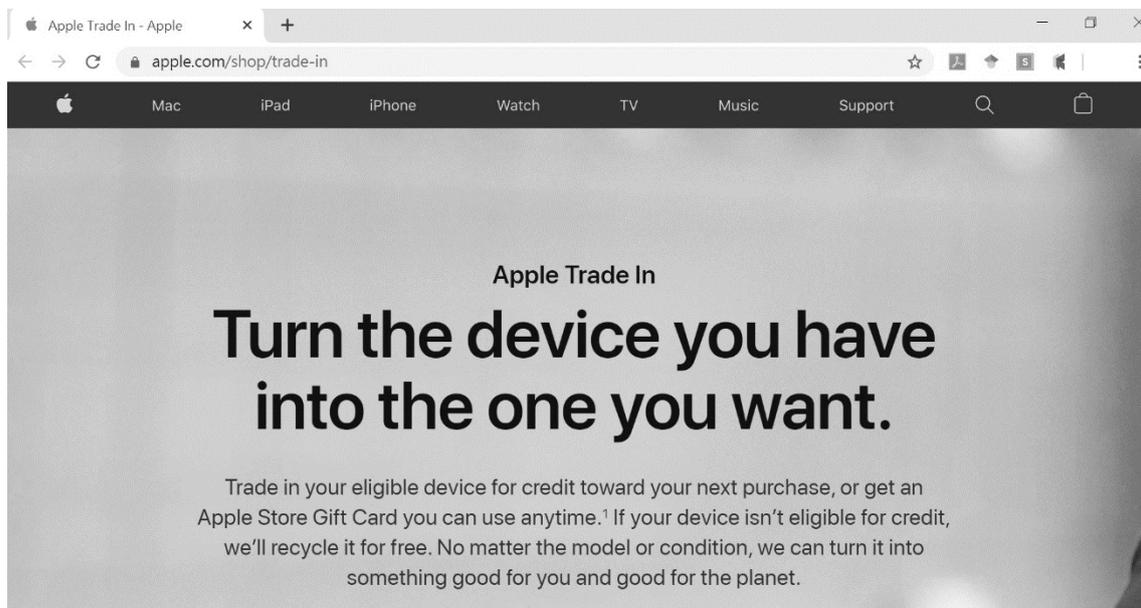
Figure 3. Apple Trade In Online
Source: Apple Store Website (2020. July. 30)
https://www.apple.com/shop/trade-in

4.1 Fuzzy numbers and linguistic variables

Zadeh [90] proposed the Fuzzy Sets Theory by arguing that there is a certain degree of fuzziness existing in human beings' subjective perceptions and understandings of things around us. An adoption of the fuzzy logic on human perceptions of things may compensate for the blind spots created by traditional binary logics (0 and 1) which swings between propositional answers of true or false. Fuzzy Sets are sets of objects without clear boundaries or definite characteristics. Membership Function describes the degree that a certain attribute in a set belongs to a sub-set, which ranges from 0 to 1.

According to Hsu and Lin [91, p.6], "All studies of marketing and consumer behavior contain qualitative variables. Wu and Chen [92] suggested that, based on social science meaurement principlas, most data or incidents are of fuzzy or uncertain nature. Given this, handling the data with hypothetical accuracy might lead to model misconstruction and increase the bias between research findings and reality. McCauley-Bell and Badiru [93] applauded Fuzzy Sets theory as an appropriate and efficient method, especially when the study pertains to explanations of risk attributes and evaluations of risk levels. Krcmar, et al. [94] found that the application of Fuzzy Sets theory had higher flexibility than statistical analysis when dealing with fuzzy and uncertain decisions. Chen [95] argued that given the qualitative elements of evaluation process and the subjectivities of decision-makers, accurate decision model was unfit to

explain the actual decision-making scenarios. Instead, drawing on the linguistic variables to represent the subjective evaluations of decision makers, and incorporating the fuzzy evaluation values of multiple decision-makers, may generate better results. "

4.2 Using Fuzzy Linguistic Preference Relations Analysis to generate the weight values of SIVA-Need attributes

The marketing thinking of SIVA marketing mix was customer-focused, which emphasized on customer needs. The was developed based on human needs. With the combination of the two, the SIVA-Need hierarchical model should embody, more completely, the customer-focused spirit with emphases on customer needs. Therefore, to obtain the weight values of each dimension and attributes of the model, it is only fit to collect data from customers as they can provide direct responses. This study developed a questionnaire based on the SIVA-Need model and targeted the heavy users[2] of Apple products as survey participants. With a total 326 valid questionnaires collected (Appendix 1), this study used the following functions for subsequent analyses.

[2]Heavy users were defined as those who had purchased and used at least 3 Apple products with the user experience of minimum 6 years. As these users had accumulated a certain degree of understanding of Apple services based on their multiple years of experiences of Apple products, they were treated as the experts and representatives of customers of Apple company in this study.

This study followed the Fuzzy Linguistic Preference Relations proposed by Wang and Chen [96] and calculated the weights of SIVA-Need dimensions and attributes. By combining fuzzy analytic hierarchy process and fuzzy linguistic variables, the Consistent Fuzzy Linguistic Preference Relations method was applied to establish the Consistent Fuzzy Linguistic Preference Relations (CFLPR) matrix. This method could simplify the computation procedure and reduce the pairwise comparisons with only n-1 questions required in the questionnaires. This method also improved the response inconsistencies among experts and increased the efficiency and accuracy of the overall decision-making process as it met actual needs better in operations with higher consistency [96].

To assess the subjective preferences of consumers during various decision-making process, linguistic variables were adopted to indicate the values of each dimension and attributes. Linguistic variables are linguistics terms by nature, which are often used in complex or ambiguous situations [97]. For example, phrases such as "equal importance", "moderate importance", "strong importance", "fairly importance", and "very strong importance" could be used to describe the degree or value of importance of items. By applying fuzzy linguistic variables, participants could express their preliminary opinions plainly and respond adequately to the vagueness of questions, which helps to increase the feasibility of analysis results [98]. Among the commonly-used fuzzy numbers—triangular, trapezoidal, and normal fuzzy number, triangular fuzzy number is most widely adopted [99-101]. The computation procedure of Consistent Fuzzy Linguistic Preference Relation is as follows.

1. Establishing fuzzy linguistic variables
   Based on the Triangular fuzzy importance scale (Figure 4) developed by Tolga and colleagues (Tolga, et al. [102]) and 9-point linguistic scale, a fuzzy linguistic preference relation matrix was established. The linguistic value set was defined as $N_k = \{$ equal importance, moderate importance, strong importance, very strong

importance, demonstrated importance ∤ (K=1, 2, …, 5), which was then provided for the participants. Participants could assign values to each dimension and attributes in the SIVA-Need model, as listed in Table 5.
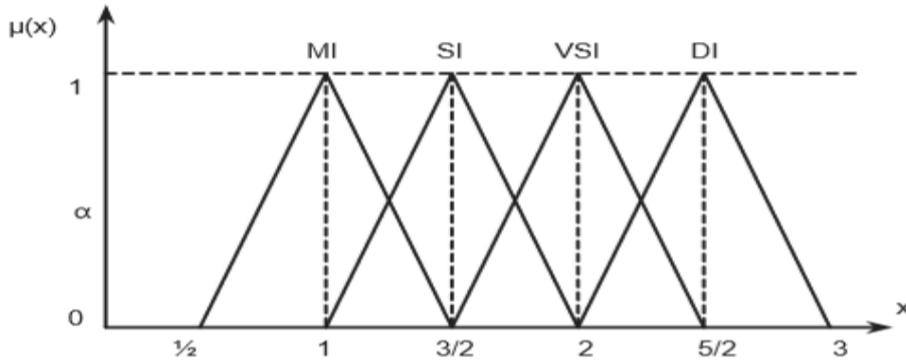
Figure 4. Triangular fuzzy importance scale
Source: Büyüközkan [103]

Table 5. Fuzzy number definitions

Linguistic variables	Designation	Triangular fuzzy number	Triangular fuzzy reciprocal scale
Demonstrated importance	DI	(2, 5/2, 3)	(1/3, 2/5, 1/2)
Very strong importance	VSI	(3/2, 2, 5/2)	(2/5, 1/2, 2/3)
Strong importance	SI	(1, 3/2, 2)	(1/2, 2/3, 1)
Moderate importance	MI	(1/2, 1, 3/2)	(2/3, 1, 2)
Equal importance	EI	(1, 1, 1)	(1, 1, 1)

Source: Tolga, et al. [102]

2. Fuzzy linguistic variable weight
   The selected set was defined as C= ∤ $C_1, C_2, …, C_n$ ∤ , which was then transformed into the fuzzy positive reciprocal matrix $\tilde{A} = \tilde{a}_{ij}$, $\tilde{a}_{ij} \in [\frac{1}{9}, 9]$. Let triangular fuzzy number $\tilde{a}_{ij}$ represent the results of pairwise comparisons of attributes (fuzzy positive reciprocal matrix $\tilde{A}$), which was used to develop the Consistent Fuzzy Linguistic Preference Relations matrix $\tilde{P}_k = \left(\tilde{P}_{ij}^{(k)}\right)_{n \times n}$ (k=1, 2, 3, …, m) with n-1 assessments $\{P_{12}^{(k)}, P_{23}^{(k)}, P_{34}^{(k)}, …, P_{(n-1)n}^{(k)}\}$.

$$\tilde{C} = \begin{bmatrix} \tilde{1} & \tilde{C}_{12} & ... & \tilde{C}_{1n} \\ \tilde{C}_{21} & \tilde{1} & ... & \tilde{C}_{2n} \\ ... & ... & ... & ... \\ \tilde{C}_{n1} & \tilde{C}_{n2} & ... & \tilde{1} \end{bmatrix} = \begin{bmatrix} \tilde{1} & \tilde{C}_{12} & ... & \tilde{C}_{1n} \\ \tilde{C}_{12}^{-1} & \tilde{1} & ... & \tilde{C}_{2n} \\ ... & ... & ... & ... \\ \tilde{C}_{1n}^{-1} & \tilde{C}_{2n}^{-1} & ... & \tilde{1} \end{bmatrix}$$

$$\widetilde{C}ij = \begin{cases} \widetilde{1}, \ \widetilde{3}, \ \widetilde{5}, \ \ \widetilde{7}, \ \ \widetilde{9}, & \textit{By comparison with dimension j, i is more important.} \\ \widetilde{1}, \quad i = j \\ \widetilde{1}^{-1} \quad \widetilde{3}^{-1}, \widetilde{5}^{-1}, \widetilde{7}^{-1}, \widetilde{9}^{-1} & \textit{By comparison with dimension j, i is less important.} \end{cases}$$

Expert evaluation value $\tilde{P} = \left(\tilde{P}_{ij}\right) = \left(P_{ij}^{L}, P_{ij}^{M}, P_{ij}^{R}\right), \overline{\overline{P_K}} = (\overline{P_{ij}^{(k)}})_{n \times n}$(k=1, 2, 3, …, m)

Where L is the number on the left side of the triangular fuzzy number, M is the central number in the triangular fuzzy number, and R is the number on the right side of the triangular fuzzy number.

Following functions 4-1 to 4-7, by deriving the fuzzy linguistic variable preference values embedded in the matrix, a complete Consistent Fuzzy Linguistic Preference Relations matrix was established.

$$\widetilde{P}_{ij} = g\left(\tilde{a}_{ij}\right) = \frac{1}{2} \cdot \left(1 + \log_9 \cdot \tilde{a}_{ij}\right), \tag{4-1}$$

Formulas (4-2)~(4-4) are now used to obtain the triangular fuzzy number in each field of the upper triangle in the matrix.

$$P_{ij}^{L} + P_{ji}^{R} = 1, \ \forall i, j, k \in \{1,...,n\}, \tag{4-2}$$

$$P_{ij}^{M} + P_{ji}^{M} = 1, \ \forall i, j, k \in \{1,...,n\}, \tag{4-3}$$

$$P_{ij}^{R} + P_{ji}^{L} = 1, \ \forall i, j, k \in \{1,...,n\}, \tag{4-4}$$

Formulas (4-5)~(4-7) are now used to obtain the triangular fuzzy number in each field of the lower triangle in the matrix.

$$P_{ji}^{L} = \frac{j - i + 1}{2} - P_{i(i+1)}^{R} - P_{(i+1)(i+2)}^{R} \cdots - P_{(j-1)j}^{R} \tag{4-5}$$

$$P_{ji}^{M} = \frac{j - i + 1}{2} - P_{i(i+1)}^{M} - P_{(i+1)(i+2)}^{M} \cdots - P_{(j-1)j}^{M} \tag{4-6}$$

$$P_{ji}^{R} = \frac{j - i + 1}{2} - P_{i(i+1)}^{L} - P_{(i+1)(i+2)}^{L} \cdots - P_{(j-1)j}^{L} \tag{4-7}$$

By applying the functions 4-8, 4-9, and 4-10, all the fuzzy linguistic variable preference values $\tilde{P}_{ij}$ in the Consistent Fuzzy Linguistic Preference Relations matrix were within the range between 0 and 1, and the fuzzy linguistic preference matrix obtained using conversion function corresponding to the fuzzy set was uniformly within a certain scope, which maintained the consistency of addition and positive reciprocal numbers (c denotes the minimum value in the Consistent Fuzzy Linguistic Preference Relations matrix).

$$f\left(x^{L}\right) = \frac{x^{L} + c}{1 + 2c}, \ c \in \left[-c, 1+c\right] \tag{4-8}$$

$$f\left(x^{M}\right) = \frac{x^{M} + c}{1 + 2c}, \ c \in \left[-c, 1+c\right] \tag{4-9}$$

$$f\left(x^{R}\right) = \frac{x^{R} + c}{1 + 2c}, \ c \in \left[-c, 1+c\right] \tag{4-10}$$

Function 4-11 was adopted to calculate all participants' opinions by averaging participants' ratings of each attribute.

$$\overline{\overline{P}}_{ij} = \frac{\sum_{k=1}^{m} \overline{\overline{P}}_{ij}^{(k)}}{m}, \forall i, j,$$ （4-11）

Function 4-12 calculated the mean of $\overline{\overline{P}}_i$, the averages of item i (where n is the number of attributes).

$$\overline{\overline{P}}_i = \frac{\sum_{j=1}^{n} \overline{\overline{P}}_{ij}}{n}, \forall i,$$ （4-12）

Weights normalization, the weight vector of attribute i, was obtained through Function 4-13.

$$\overline{W}_i = \frac{\overline{\overline{P}}_i}{\sum_{j=1}^{n} \left(\overline{\overline{P}}_i \right)},$$ （4-13）

Weight of each attribute was generated through Function 4-14. Defuzzied weights $D_i \left(i = 1,2,3,...,n \right)$ were derived based on each element $x \left(i = 1, 2, 3, ..., n \right)$, and then ranked in order.

$$D_i = \frac{1}{3} \left(w_i^L + w^M + w_i^R \right)$$ （4-14）

After cleaning and organizing the data of 326 valid questionnaires from heavy users, the above functions were used to calculate the defuzzied weights of each dimension and attributes. The result indicated that the crucial attribute of Apple company's marketing strategy was brand community value with a relative weight of 0.0631 (see Table 6). In other words, brand community value[3] is the crucial factor which affects customers' purchase of Apple products or services.

[3]Muniz and O'guinn [104, P412]: 「A brand community is a specialized, non-geographically bound community, based on a structured set of social relationships among admirers of a brand. It is specialized because at its center is a branded good or service. Like other communities, it is marked by a shared consciousness, rituals and traditions, and a sense of moral responsibility. Each of these qualities is, however, situated within a commercial and mass-mediated ethos, and has its own particular expression. Brand communities are participants in the brand's larger social construction and play a vital role in the brand's ultimate legacy.」 Zeithaml [105] defined "customer value" as the total benefits that customers obtained from the product or service after weighing against the costs paid. In a similar vein, this study conceptualized "brand community value" as the total benefits obtained by customers of a brand community who participated in the activities of the structures social relations after weighing against the total cost paid.

Table 6. Apple company SIVA-Need model weights

Dimension			Attributes			Relative weight	Rank
Name	weight	rank	name	weight	rank		
Solutions	0.2490	2	Amenity	0.2115	2	0.0526	5
			Commodity safety	0.2218	1	0.0552	3
			Sociability	0.1859	5	0.0463	19
			Exclusiveness	0.1947	3	0.0485	12
			Personal style	0.1861	4	0.0463	18
Information	0.2391	3	Functionality	0.1944	5	0.0465	16
			Information safety	0.2054	1	0.0491	9
			Realtime interaction	0.2048	2	0.0490	10
			Respect for diversity	0.2004	3	0.0479	13
			completeness	0.1949	4	0.0466	15
Value	0.2770	1	Product benefits	0.2201	2	0.0610	2
			Psychological benefits	0.1824	4	0.0505	6
			Brand community value	0.2276	1	0.0631	1
			Sense of honor	0.1938	3	0.0537	4
			Personal value	0.1761	5	0.0488	11
Access	0.2349	4	Efficiency	0.2092	2	0.0491	8
			Consumption safety	0.2118	1	0.0498	7
			Belongingness	0.1788	5	0.0420	20
			Courteous reception	0.2025	3	0.0476	14
			Autonomous consumption	0.1977	4	0.0465	17

4.3 Apple company's performance rating of each attribute in SIVA-Need model

Based on the resulting Apple company's relative weights of attributes in SIVA-Need model, this study conducted a performance evaluation. A rating scale ranges from 1 to 5 was used to assess the "expected performance" and "actual performance" in terms of each attribute.

The relative weights of SIVA-Need attributes were denoted by (CW_i), the actual performance rated by participants was denoted by (e_i), and the expected performance was (g_i). Multiplying the relative weights by actual performance, the actual performance score (P_i) of SIVA-Need attributes was derived (Function 4-15). Dividing expected performance (g_i) by actual performance (e_i), the improvement score (u_i) of SIVA-Need attributes was derived (Function 4-16). The analysis results could be

provided as references for future improvements of the case study company in terms of SIVA-Need attributes.

$$p_i = cw_i \times e_i \qquad\qquad (4\text{-}15)$$

$$u_i = g_i \div e_i \qquad\qquad (4\text{-}16)$$

Following functions 4-15 and 4-16, data collected from the 326 participants was calculated. The results indicated that brand community value had the biggest performance gap (1.50) and the highest performance improvement score (1.284) whereas product benefit had the highest performance score (0.235). For more details, please see Table 7.

Table 7. Apple company SIVA-Need performance score and improvement score

attributes \ category	relative weight (cw_i)	expected performance (g_i)	actual performance (e_i)	Performance gap	performance score (p_i)	improvement score (u_i)
Amenity	0.0526	4.55	3.80	0.75	0.200	1.198
Commodity safety	0.0552	4.54	4.00	0.54	0.221	1.136
Sociability	0.0463	3.95	3.50	0.45	0.162	1.129
Exclusiveness	0.0485	4.45	3.70	0.75	0.179	1.203
Personal style	0.0463	4.40	3.60	0.80	0.167	1.223
Functionality	0.0465	4.55	3.86	0.69	0.179	1.180
Information safety	0.0491	4.50	4.25	0.25	0.209	1.060
Realtime interaction	0.0490	4.20	3.75	0.45	0.184	1.120
Respect for diversity	0.0479	4.30	3.75	0.55	0.180	1.147
completeness	0.0466	4.55	3.80	0.75	0.177	1.198
Product benefits	0.0610	4.55	3.85	0.70	0.235	1.182
Psychological benefits	0.0505	4.35	3.40	0.95	0.172	1.279
Brand community value	0.0631	4.75	3.70	1.05	0.233	1.284
Sense of honor	0.0537	4.25	3.65	0.60	0.196	1.166
Personal value	0.0488	4.40	3.65	0.75	0.178	1.204
Efficiency	0.0491	4.45	3.80	0.65	0.187	1.171
Consumption safety	0.0498	4.35	3.85	0.50	0.192	1.129
Belongingness	0.0420	4.05	3.45	0.60	0.145	1.174
Courteous reception	0.0476	4.35	3.71	0.64	0.176	1.174
Autonomous consumption	0.0465	4.55	4.35	0.20	0.202	1.047

5. CONCLUSIONS AND SUGGESTIONS

5.1 Discussion

Research on customer-focused marketing conducted within the past 30 years has explained the basic work of marketing [34], the role of organizational structure [35, 36], marketing capabilities [38], the role of endorsers [39], performance [37, 38, 40, 42, 106, 107], market orientation-marketing mix capability-new product performance[41], price systems and product development [108], customer satisfaction [109, 110] and other research results concerning organizational and marketing strategies. There are also studies explaining how customer-focused marketing can satisfy customers' needs and wants, and thereby enhance customer satisfaction [45, 46]. Although these research results have been verified on a theoretical level, there is as yet no practical marketing strategy evaluation model that can measure the key attributes of customers' needs and wants. Analysis of key attributes can enable a company to determine those elements that should be improved as a first priority in order to ensure customer satisfaction [57, p458], which implies that the analysis of key attributes is a very important part of the development and selection of marketing strategies. A SIVA marketing mix can be facilitate the discovery of customer needs and wants [71], and the intent of hierarchy of needs theory is to explain human needs, from the most basic to the highest. The core aspects of these two theories both emphasize human needs, and the 20 attributes developed in this study by linking the individual aspects of the two theories are the "needs" attributes of customers at each level of the hierarchy of needs when engaging in consumer activities. The marketing strategy MADM model—SIVA-Need—constructed using these attributes possesses the three characteristics of depth, breadth, and concreteness, and can be used to measure the key attributes of customers' needs and wants. This model can therefore fill the current gap in research on customer-focused marketing strategies.

The SIVA-Need model has the following operating procedures: Weighting analysis is performed of the various attributes in the model to measure the key attributes of customers' needs and wants, which is followed by the allocation of resources in accordance with the measured weights. The next step is to draft an action plan for the marketing strategy based on the allocation of resources and analysis of the internal and external environment. After the action plan has been implemented for a certain period of time, its performance must be assessed, which will allow the evaluation of whether the performance of the key attributes derived from customers' needs and wants has been improved. As soon as the performance of the key attributes has been improved, this indicates that satisfied, repeat customers have been created. A marketing strategy MADA model of this type can provide marketing managers with an effective measurement tool for use in the practical operation of marketing strategies, and can precisely measure the key attributes of customers' needs and wants. Such a model can achieve substantial benefits during the planning of marketing strategies, and its use is not limited to merely providing theoretical knowledge of the positive correlation between customers' needs and customer satisfaction. The findings of this study consequently have both theoretical and practice importance for researchers and managers.

5.2 Conclusions

The active influence of marketing strategies on performance has already been verified by numerous studies [8, 54, 111, 112], and research has also shown that customer-focused marketing can provide a competitive advantage [54, 113]. However, much of the past research concerning customer-focused marketing strategies has sought

to chiefly investigate the causal relationships and correlations between marketing strategy variables [e.g., 54, 113, 114], or the result of different marketing strategies on a company's financial situation [112]. Although these studies concerning marketing strategies are based on a customer-focused perspective, their findings lack the theoretical basis that could be used to construct an evaluation model able to measure customers' true inner needs and wants. And without any way to determine customers' needs and wants, marketing managers will be without any means of effectively planning marketing strategies.

In light of SIVA matrix's focus on deepening customer thinking and the inclusiveness of Maslow's hierarchy of needs, this study adopted these two theoretical foundations and constructed an inclusive, innovative, and customer-focused marketing strategy MADM model—SIVA-Need model. Dimensions and attributes in the model could well represent the essences of internal thinking about product or service needs during consumption. As the products or services provided by any industry will eventually go to the customers, SIVA-Need model is a feasible and consistent evaluation foundation for marketing strategy planning as it enables an extensive evaluation on strategies.

Drawing on the SIVA-Need model, research findings based on the analysis of the case study company showed that the dimension—customer value—had the highest weight among the four. Of the 20 attributes in the model, brand community value had the highest weight and was found to be the critical attribute in SIVA-Need model. While brand community value was seen by the participants as the most crucial element, customers of Apple products and services place high value on brand community value. When planning marketing strategies, company executives should prioritize the improvement of brand community value and allocate marketing resources accordingly.

5.3 Management implication

SIVA-Need model provides a consistent evaluation foundation for marketing executives to plan for marketing strategies. By adopting the model, companies could come up with effective marketing plans based on the calculated weights on target customers and allocate resources efficiently in order to create satisfied and repeat-purchase customers and achieve high performance.

Given that, Apple company may allocate marketing resources and design effective marketing strategies based on the relative weights of attributes, which helps to bring marketing thinking and activities closer to customer needs. Among the four dimensions, customer value was found with the highest weight. Company executives should be mindful of customer value and customer thinking, be responsive to customers' feedback and understanding of customers' needs and feelings in order to create a positive total benefit perceived by customers after weighing against the total cost paid. Among the 20 attributes, brand community value was found with the highest relative weight. Muniz and O'guinn [104] suggested that brand stories increase the community value and instill positive beliefs in customers. Investments on the improvements of brand community value often generates high cost-effectiveness. For example, Algesheimer, et al. [115] mentioned that many marketing professionals believed that building brand communities are both cost-effective and powerful in today's hostile marketing environment. Accordingly, when designing marketing strategies, it is suggested that managers should prioritize brand marketing. By elevating brand image and strengthening brand community value, companies may create more satisfied and repeat-

purchase customers and improve business performance as customers identify themselves as members of the brand community and feel rewarded with total benefits higher than total costs. The importance of brand community value could be summarized in a quote from Muniz and O'guinn [104, P412]: "Brand communities are participants in the brand's larger social construction and play a vital role in the brand's ultimate legacy." In brief, by improving brand community value, executives also increase the brand value, which eventually brings mutual benefits by creating a virtuous circle.

5.4 Contributions

Most past research on marketing strategy evaluation models has sought to investigate the causal relationships and correlations between marketing strategy variables [e.g., 8, 10, 53, 54], and there has been very little research on the use of MADM models to investigate the key elements of marketing strategies. In addition, there have been even fewer attempts to use MADM models constructed entirely on a customer-focused basis to investigate the key elements of marketing strategies, and the attributes in the very few MADM models constructed in past research simultaneously embody customer-focused and company-focused perspectives [e.g., 27, 28], which made it difficult to precisely measure the key attributes of customers' needs and wants. Many studies concerning SIVA have pointed out that a focus on customers' needs can facilitate the co-creation of value with customers, which will lead to enhanced customer satisfaction [e.g., 69, 71-73]. Even though Dev and Schultz [29] combined SIVA and 4P in a 4x4 decision matrix, which they used to analyze customer problems [116, 117], this and other studies did not consider the customer's hierarchy of needs, and in spite of their breadth, were therefore lacking in depth. This study consequently employed SIVA and Maslow's hierarchy of needs to construct a marketing strategy MADM model based on a customer-focused perspective and possessing both breadth and depth.

This study contributes to marketing theories and practices in four aspects. First, this study combines the dimensions from SIVA marketing mix and Maslow's hierarchy of needs, and derives attributes based on conceptualization, which offers an alternative perspective in terms of research instruments development. Second, the innovative fully customer-focused marketing strategy MADM model constructed in this study—SIVA-Need—provides 20 index attributes for future researchers in the marketing strategy field. It is believed that the innovative model could lead to various applications and generate more useful information. Third, this study takes Apple company as the case study company and calculates the relative weights of 20 attributes. The results may be used by the management as a consistent evaluation foundation for extensive strategic marketing assessments in their future marketing practices. Fourth, this study proposes the innovative concept of brand community value.   According to Muniz and O'guinn [104], a brand community comprises a group of brand lovers, who form a series of structured social relationships beyond the constraints of time and space. Findings of this study suggest that besides the existence of the structured social relationship, there is a value judgement made by the customers of the structured social relationship. Being part of a brand community, customers expect to gain a benefit higher than the cost, which is the primary concern of customers when making purchases. The concept of brand community value reminds researchers in relevant research field that, apart from the formations of brand communities [e.g., 118], the effect of brand community on brand loyalty [e.g., 119, 120], and integration in a brand community [e.g., 121, 122, 123], brand community value is also worth further study. Moreover,

brand community value may provide the marketing managers an alternative perspective to plan marketing strategies.

5.5 Suggestions for future studies

1. This study chose Apple company as the case study company. As an icon in the technology industry which invests in brand marketing, the findings based on Apple may not be applicable to other industries. To know the differences, future studies on other industries are needed. 2. As a famous brand, whether Apple's emphases on its brand image led to the result of brand community value being the crucial attribute awaits further comparative studies with other companies. 3. Future studies may consider explore the dimensions embedded in the brand community value. A closer examination of the concept might help marketing managers have solid brand community value classifications for weight analysis, marketing resources allocation, and marketing strategies planning in future brand community strategic marketing assessments.

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7. APPENDIX

Appendix 1. Basic information from 326 valid questionnaires

Item	Subitem	M	F	Total	%
Marriage	Married	73	88	161	49.4
	Unmarried	69	96	165	50.6
Age (years)	Under 20	6	5	11	3.4
	21~30	45	43	88	27.0
	31~40	51	71	122	37.4
	41~50	27	48	75	23.0
	Over 51	13	17	30	9.2
Education	High school	9	16	25	7.7
	University (including junior college)	121	148	269	82.5
	Master's degree and above	12	20	32	9.8
	Students	9	8	17	5.2
	Technical	27	16	43	13.2

Identity	Working people	Service	18	41	59	18.1
		Administration	46	77	123	37.7
		Managerial	39	33	72	22.1
	Retired		3	9	12	3.7
Position		None (student and retired)	12	17	29	8.9
		Basic level	25	43	68	20.9
		Mid-level	68	94	162	49.7
		Upper level	37	30	67	20.6
Annual income (NT dollars/10,000)		Under 30 (inclusive)	17	19	36	11.0
		31~60	37	65	102	31.3
		61~100	53	72	125	38.3
		Over 101 (inclusive)	35	28	63	19.3
Place of residence		Northern Taiwan	59	76	135	41.4
		Central Taiwan	50	68	118	36.2
		Southern Taiwan	33	40	73	22.4