探討成功行銷新產品的決定因素

Explore the Determinants for Successful Marketing New Products

鄭育仁 [1]
國立高雄大學 經營管理研究所 教授
allen@nuk.edu.tw
羅文駿 [2]
國立高雄大學 經營管理研究所 研究生
m1113608@mail.nuk.edu.tw

Abstract

Formulating appropriate marketing strategies to sell new products (NPs) successfully is crucial for the companies to enhance their competitive advantage and improve performance. Different from past studies, this research explores the determinants of successful NPs marketing from a comprehensive basis and the senior managers‘ viewpoints. Thirteen criteria are extracted from past literature and classified into four clusters. This research adopts the DANP method proposed by Ou Yang et al. (2008) which combines DEMATEL and ANP procedures to examine the priority of successful marketing NPs. This research finds that trhe External Environment Cluster has the highest net influence and the Marketing Mix Cluster exerts the least net influence but the greatest overall total influence. It implies that the companies should monitor the external environment before formulate their NPs marketing strategies, and the companies must set up an appropriate combination 4Ps according to the characteristics of their NPs to create a reliable NPs marketing strategy. From the top three priority criteria, this research suggests that the companies may exploit the established brand image for reducing customers' uncertainty and increasing their trust on NPs. The companies should collect customer preferences for providing appropriate NPs to satisfy the needed customers. The companies have to screen market competition to boost their competitive position. The research results also reflect the rationale of the last three priority criteria. By the rapid development of information technology, place will no longer act as a remarkable factor to attract NPs except for some high price or extraordinary ones. If the companies have not created clear position, hurriedly launching NPs may result in marketing failure. Additionally, the responsive lag of technology progress will hinder the government to make proper policies to aid NPs marketing timely.

Keywords: MCDM (Multi-Criteria Decision Making), DEMATEL, ANP, DANP, NPs (New Products) Marketing.

1. Introduction

New products (NPs) denote the products which are brand new or improved from existed products. NPs play important roles in enhancing people's quality of lifestyle by providing new usage or improving the utilization of existing products. For developing NPs, every government and company devote themselves in research and development (R&D) activities which result in the global R&D expenditure amounted to nearly 2.5 trillion U.S. dollars in 2022 (Dyvik, 2023). Organization for Economic Cooperation and Development (OECD) demonstrates the top 10 representative countries on gross domestic R&D expenditure of NPs accounts for the proportion of GDP from 2018 to 2022. Statistics shown that countries with higher proportion of R&D expenditure are concentrated in Europe, Asia, and North America.

NPs can substantially benefit economic growth for countries. For example, European Union Countries have contributed 2.1 billion euros from selling NPs in 2020 to 2023. The rationale is that NPs development can concentrate companies to form industrial cluster to protect their existing competitive advantages (Eraydin & Armatli, 2005) and promote new technology information spillover which enables companies to grasp market opportunities to foster NPs

development (Lin, Tung, & Huang, 2006). The launch of NPs is the source of growth for most companies (Stremersch & Tellis, 2004). Cooper, Edgett, & Kleinschmidt (2004) indicated that the most popular performance indicator is the percentage of NPs sales in gross revenue. They show that the well-performed top 20 percent companies, 38 percent of revenue and 42.4 percent of profits come from NPs. Many innovation-oriented companies adopt NPs sales as the most important indicator to assess their performance (Trihatmoko, 2020). For example, 3M company, a widely recognized pioneer in innovation and leader in R&D and product development breakthroughs (Boh, Evaristo, & Ouderkirk, 2014), posted its objective from achieving 25 percent of the revenue from NPs within five years to 30 percent within four years in the 1990s (Shapiro, 2016).

Yet, to develop the NPs is one thing, how to sell these NPs is another challenge. Only marketing NPs successfully can bring in revenue for the companies. Under these circumstances, how to formulate effective marketing NPs strategies to ultimately persuade customers to accept and purchase the NPs. In the past, most researches have focused on limited factors to study the issues of successfully market NPs from the perspective of consumers. This research adopts a more comprehensive perspective and utilizes DANP method to collect data from the viewpoint of experts/scholars and senior managers in marketing-related departments.

In the DEMATEL stage, the research results show that the External Environment Cluster has the highest net influence and the lowest total influence on the other clusters, it serves as the primary influence source of the clusters. This finding shows that the companies should screen the external environment, such as customer preferences, SWOT analysis, government financial subsidy, and infrastructure provided by government before formulate their NPs marketing strategie. In addition, seeing the Marketing Mix Cluster exerts the greatest total influence but the least net influence, it can be seen as the central role among the four clusters. This research result implies that the companies must set up an appropriate combination of product, price, promotion, and place (4Ps) on the basis of the characteristics of their NPs to create a reliable NPs marketing strategy.

In the ANP stage, the senior managers selected Brand Proliferation Criterion, Customer Preferences Criterion, and Market Competition Criterion as the top three priority criteria, while Place Criterion, Market Segmentation Criterion, and Government Policy Criterion are the last three priority criteria, respectively. When the companies make their effort in marketing NPs, this research finds that the companies may exploit the established brand image for reducing customers' uncertainty and increasing their trust on NPs to lift market share. The companies should also collect customer preferences exactly and swiftly for providing appropriate NPs to satisfy the needed customers, then foster customers' loyalty. The companies have to stick their eyes on market competition trends, identify their competitive advantages, formulate corresponding marketing strategies for NPs to boost current competitive position. The research results also reflect the rationale of the last three priority criteria. By information technology, the potential customers can easily access or reach NPs, except for some high price or extraordinary NPs, place will no longer be a remarkable factor to attract customers. In addition, if the companies take hurried decision to launch NPs before well created clear position, it may result in marketing failure. From the perspective of senior managers, current government seems to pay more attention on the NPD phase instead of the needs of NPs marketing. Worse more, the government is always insensitive on the trend of technology progress, the responsive lag will hinder the government to make proper policies to aid NPs marketing timely.

The research suggests that the government should properly react the companies' request to formulate effective policies to support NPs marketing. The research results can be served as reference guidelines for the companies when they engage in marketing NPs.

The remaining of this research is arranged as follows: Section 2 reviews the past literature regarding about the criteria for successful NPs marketing and classifies the criteria into clusters; Section 3 elaborates the adopted research methodology and data processing steps; Section 4 displays and explains the research results; Section 5 portrays the conclusion of this

research.

2. Literature Review

The marketing of NPs is a process which involves to formulate diverse marketing strategies, create reasonable marketing blueprints, design marketing combinations, utilize, and scan external environmental factors at the same time. This research categorizes the perspectives of how to market NPs successfully into four clusters namely Marketing Strategy Cluster, Marketing Planning Cluster, Marketing Mix Cluster, and External Environment Cluster. Then, decomposes the four clusters into thirteen criteria which are extracted from past articles concerned about related perspectives.

2.1 Marketing Strategy Cluster

For marketing NPs, the company must adopt pristine strategies. To enable consumers to recognize the benefits of novel or unfamiliar NPs at the first sight, companies can exploit established brand image to create consumers' awareness, trust, and gain market acceptance of NPs (Sinurat & Dirgantara, 2021) through past consumption experiences (Hariyanto, 2018). To effectively deliver NPs to consumers, companies may apply logistics system which aims to rapidly and securely deliver, store, and supply NPs to customers (Kanagavalli, 2019) with minimized total cost (Bowersox, Stank, & Daughert, 1999). The discussion of Marketing Strategy Cluster in this subsection will include Brand Proliferation Criterion and Logistics Criterion.

2.1.1 Brand Proliferation Criterion: Companies can adopt brand proliferation strategy to exploit the consumers' awareness and gain market acceptance of NPs (Sinurat & Dirgantara, 2021) from established brand image. Brand proliferation can also increase consumers' trust in NPs (Sinurat & Dirgantara, 2021) through the satisfactory of past consumption experience of the same brand (Hoyer & Brown, 1990).

2.1.2 Logistics Criterion: In NPs marketing, the goals of logistics focus on the flow of NPs from manufacturers to end-users (Stryker, 1996) for reducing cycle time (Bowersox, Stank, & Daughert, 1999); minimizing the total cost (Bowersox, Stank, & Daughert, 1999); delivering, storing, and supplying NPs rapidly and securely (Kanagavalli, 2019). The success of logistics can enhance customers' satisfaction and impact the companies' profitability positively (Mentzer & Williams, 2001).

2.2 Marketing Planning Cluster

Marketing planning plays the role of blueprint for companies to introduce NPs into markets. Tarantino (2003) suggested that the company can adopt the STP (e.g., market segmentation, targeting, and positioning) framework to cultivate a well-prepared situation for marketing NPs. In addition, companies also have to consider the timing of launching while initiating NPs into the market (Oh, Kim, & Van Iddekinge, 2015). Therefore, the Marketing Planning Cluster will be composed by Market Segmentation Criterion, Targeting Criterion, Positioning Criterion, and Product Launch Criterion in this subsection.

2.2.1 Market Segmentation Criterion: For successful marketing NP, the company has to identify potential customers and categorize them into appropriate segment markets (Bainess et al., 2010) based on their similar characteristics, such as gender, age, interests, geography, climate, and attitudes (Thomas & George, 2021).

2.2.2 Targeting Criterion: For successful marketing NP, the company has to evaluate the attractiveness of each market segment (Kotler & Armstrong, 2014) and concentrate marketing strategies align with the company's corporate goals and the profit potential (Iskandar, 2015) to choose suitable market segments to serve NPs (Jobber, 2001).

2.2.3 Positioning Criterion: For successful marketing NP, the company has to design the image of NP and establish its distinctiveness in the minds of the target consumers (Kotler, 2006; Kotler & Armstrong, 2010; Gregoriadesa & Pampakab, 2020) to meet customers' needs and enhance their satisfaction. The accurate positioning will improve consumer loyalty, and ultimately increase the company's competitive advantage, profitability, and financial performance (Hooley et al., 2001).

2.2.4 Product Launch criterion: For successful marketing NP, the company has to determine the optimal time (timing) to introduce NPs into objective markets (Oh, Kim, & Van Iddekinge, 2015). Rapidly entry into the market can enhance market share and establish industry standards (Chen, Reilly, & Lynn, 2012).

2.3 Marketing Mix Cluster

Singh (2012) emphasized that each company must design the most appropriate combination based on the characteristics of the NPs to create a reliable marketing strategy. According to Kotler (1967), marketing mix refers to the combination of product, price, promotion, and place. In this subsection, the Marketing Mix Cluster will discuss the Product Criterion, Price Criterion, Promotion Criterion, and Place Criterion.

2.3.1 Product Criterion: For successful marketing NP, the companies must consider current trends of consumer's unspecified and constantly change preference and needs (Hauser, Tellis, & Griffin, 2006; Lamore et al., 2013; Kieliszek et al., 2018). They have to adopt significantly new technologies or ideas into NPs (McDermott & O'Connor, 2002) and present NPs to consumers in the different forms like differentiation (Kotler & Keller 2012) or low-cost (Naletina, Damić, & Jabučar, 2019) to increase the survival and success rate of NPs.

2.3.2 Price Criterion: Company must understand that price is the only element to generate profit, customer satisfaction, and loyalty of the marketing mix (Išoraitė, 2016). For successful marketing NP, the companies may adopt including market penetration pricing, market skimming pricing (Hultink et al., 1997; Langerak, Hultink, & Robben, 2004), predatory pricing (Moisejevas, 2017; Murniati, Sunaryo, & Rohaini, 2023), mark-up pricing (Gao, 2023), static pricing, or dynamic pricing strategies (Liu, Zhai, & Chen, 2019). Companies must profoundly select the appropriate pricing strategies when launching NPs.

2.3.3 Place Criterion: Place is a channel, distribution, or intermediary which ensures NPs that are available and accessible for consumption and help the existing and potential consumers to reach or find the NPs (Gürbüz, Albayrak, & Alaybeyoğlu, 2014; Sudari et al., 2019; Ganatra et al., 2021). A suitable selected place is a remarkable factor to attract NPs customers (Brata, Husani, & Al, 2017). Companies should provide the right place information at the right time to real and potential consumers (Fei, Zhang, & Deng, 2021; Duboff, Potin, & Rodrigo, 2014).

2.3.4 Promotion Criterion: Promotion plays an active role in introducing and informing the benefits of NPs (Brata, Husani, & Ali, 2017). Promotion can increase consumer awareness of NPs and disseminate information to encourage the customers' buying decision process (Išoraitė, 2016). Properly and intensively implements promotion activities can be expected to result in higher competitive advantage and increase marketing performance (Yasa et al., 2020).

2.4 External Environment Cluster

The external environment may influence the choice of companies' NPs marketing strategies (Pearce & Robinson, 2013). In the external environment, companies can formulate NPs' marketing strategies under customer preferences, their own strengths and weaknesses compared with competitors (Heiens, 2000), financial subsidy from government (Chen, Meng, & Yu, 2023; Schwartz & Clements, 1999), and infrastructure provided by government (Serradilla et al., 2017; Helmus et al., 2018). Therefore, the External Environment Cluster will comprise of Customer Preferences Criterion, Market Competition Criterion, and Government Policy Criterion in this subsection.

2.4.1 Customer Preferences Criterion: When marketing NP, customer preferences described the needs and expectations (Cao, Li, & Ramani, 2011), or the individual tastes of various bundles of goods (Atulkar & Kesari, 2014) of customer for a NP. The companies have to understand customer preferences for better developing marketing strategies and mixes to attract customers' attention on NPs.

2.4.2 Market Competition Criterion: For successful marketing NP, companies have to consider the influence of the responses and actions of competitors (Chen, 1996) and to analysis their strengths and weaknesses with competitors for planning a suitable competing strategies (e.g., low cost or differentiation strategies) (Heiens, 2000; Porter, 1980).

2.4.3 Government Policy Criterion: For cultivating the marketing of NPs, government can adopt policies to support companies directly by financial funding (Rijinsoever et al., 2014; Jin, Mckelvey, & Dong, 2020), such as tax credits, grants, loan guarantees, and subsidized loans (Medase & Barasa, 2019) to reduce manufacturing cost. Government may also provide subsidy to consumers to lessen acquiring burden (Chen, Meng, & Yu, 2023; Schwartz & Clements, 1999). In addition, governments can further provide a friendly NPs usage environment by building infrastructure to encourage consumers to purchase NPs (Serradilla et al., 2017; Helmus et al., 2018).

Chapter 3 Research Methodology

This research utilizes the DANP method which combines DEMATEL and ANP methodologies proposed by Ou Yang et al. (2008) to explore the determinants of successfully marketing NPs. In DANP, DEMATEL is used to evaluate the degrees of influences among clusters, then apply to ANP to establish the weights of clusters in ANP and further evaluate the prioritization of NP marketing criteria. The flowchart is depicted as Fig. 3.1, the detail procedure of each step is described in the following sub-sections.

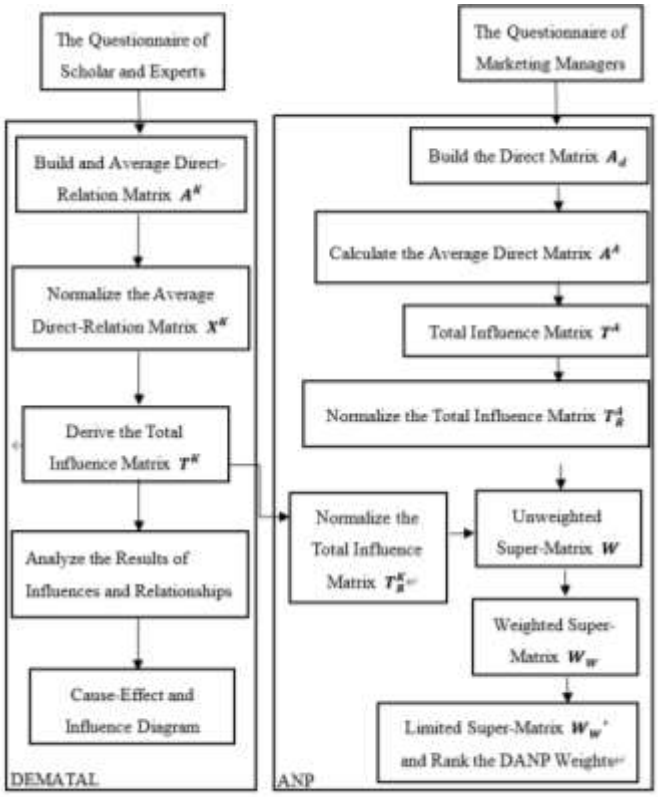

Fig. 3. 3 The Flowchart of DANP Steps (Source: Rearranged by This Research)

3.1 The Steps of DEMATEL Procedure

Step D1: Calculate Average Direct-Relation Matrix A^K

The questionnaire received from each respondent will generate a direct-relation matrix D_x, x = 1, 2, 3, ⋯, n, where n is the number of respondents. Each element of D_x, denoted by d_{ij}^x, means the influence cluster i impacts on cluster j, shown as Eq. (1). The average direct-relation matrix A^K is calculated by averaging the corresponding elements in the direct-relation matrix D_x. Each element in the average matrix A^K represented as a_{ij}^K which is calculated by Eq. (2).

$$\boldsymbol{D_x} = \begin{bmatrix} d_{11}^x & \cdots & d_{1j}^x & \cdots & d_{1n}^x \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ d_{i1}^x & \cdots & d_{ij}^x & \cdots & d_{in}^x \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ d_{n1}^x & \cdots & d_{nj}^x & \cdots & d_{nn}^x \end{bmatrix}$$, where *n* denotes the number of clusters. (1)

$$\boldsymbol{A^K} = \begin{bmatrix} a_{11}^K & \cdots & a_{1j}^K & \cdots & a_{1m}^K \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ a_{i1}^K & \cdots & a_{ij}^K & \cdots & a_{im}^K \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ a_{m1}^K & \cdots & a_{mj}^K & \cdots & a_{mm}^K \end{bmatrix}$$, where $a_{ij}^K = \sum_{x=1}^{m} d_{ij}^x / n$ (2)

Step D2: Normalize the Average Direct-Relation Matrix $\boldsymbol{X^K}$

The normalized average direct-relation matrix $\boldsymbol{X^K}$ is gained by normalizing $\boldsymbol{A^K}$ through Eqs. (3) and (4). All the principal diagonal factors are equal to zero.

$$s^K = min\left[\frac{1}{max\sum_{j=1}^{n}[a_{ij}^K]}, \frac{1}{max\sum_{i=1}^{n}[a_{ij}^K]}\right] \quad (3)$$

$$\boldsymbol{X^K} = s^K \times \boldsymbol{A^K} \quad (4)$$

Step D3: Derive the Total Influence Matrix $\boldsymbol{T^K}$

The total influence matrix $\boldsymbol{T^K}$ can be derived by Eq. (5), in which $\boldsymbol{I}$ represents the identity matrix. The element t_{ij}^K in $\boldsymbol{T^K}$ is expressed as the direct or indirect influence from cluster *i* to cluster *j*. When $\lim_{s\to\infty} \boldsymbol{X^{K^s}} = [\boldsymbol{0}]_{n\times n}$, the total-influence matrix is listed as follows:

$$\boldsymbol{T^K} = \lim_{s\to\infty}\left(\boldsymbol{X^K} + \boldsymbol{X^{K^2}} + \boldsymbol{X^{K^3}} + \cdots + \boldsymbol{X^{K^s}}\right) = \boldsymbol{X^K}(\boldsymbol{I} - \boldsymbol{X^K})^{-1} \quad (5)$$

In $\boldsymbol{T^K}$, r and c respectively represent the vector of row sums and vector of column sums, which can be calculated by Eqs. (6) and (7).

$$r = (r_i)_{n\times 1} = \left[\sum_{j=1}^{n} t_{ij}\right]_{n\times 1} \quad (6)$$

$$c = (c_j)_{1\times n} = (c_j)'_{n\times 1} = \left[\sum_{i=1}^{n} t_{ij}\right]'_{n\times 1} \quad (7)$$

where r_i is the sum of the i^{th} row of $\boldsymbol{T^K}$ which denotes the total of direct and indirect influences of cluster i impacts on the other clusters; c_j is the sum of the j^{th} column of $\boldsymbol{T^K}$ which denotes the total of direct and indirect influences that cluster j received from the other clusters. When *i* = *j*, the $r_i + c_i$ is the sum of the row sum and column sum of cluster i which is called "prominence" that indicates the strength of the total influence gives to and receives from the other clusters (Kumar & Anbanandam, 2020). A higher value of $r_i + c_i$ indicates that the cluster *i* plays a central role and has a stronger connection with the other clusters (Drumond et al., 2022). On the other hand, $r_i - c_i$ denotes the "relation" which indicates the degree of cluster i influence on the overall framework (Hsu, Shih, & Pai, 2020). If $r_i - c_i$ is positive, it implies that cluster i net affects the other clusters; If $r_i - c_i$ is negative, cluster i is net influenced by the other clusters (Dalvi-Esfahani et al., 2019). A high positive value of $r_i - c_i$ implies that cluster i has a strong influence on the other clusters than it received from the other clusters (Zhang & Deng, 2019).

Step D4: Analyze the Results of Influences and Relationships

In the matrix $\boldsymbol{T^K}$, each element t_{ij} offers information about how much influence of cluster *i* impose on cluster *j*. For straightening out the significant cluster, Ou Yang et al. (2008) established a threshold (α) to filter and eliminate minor influence clusters in the matrix $\boldsymbol{T^K}$. Considering the difference among significant influence clusters and minor influence clusters may be minimal, this research adopts the suggestion of Jerusalem (2019) and Utama, Maharani, & Amallynda

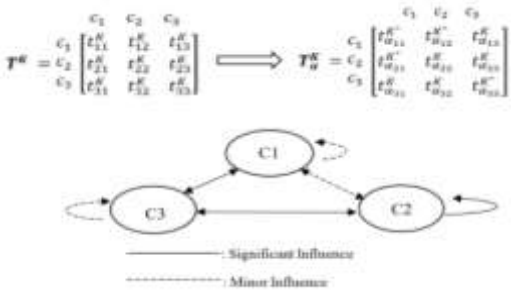

Fig. 3.4 The Revised Edition of $\boldsymbol{T^{K^*}}$ and Influence Diagram

Source: Revised by This Research

(2021) to mark the upper-right corner of minor influence clusters with an asterisk "*" to indicate that the values which are below α rather than to replace by 0. For instance, the values of elements t_{11}^K, t_{12}^K, t_{21}^K, and t_{33}^K are smaller than α in $\boldsymbol{T^K}$, thus marking them with asterisk "*", shown as Fig. 3.2.

3.2 The Steps of ANP Procedure

Step A1: Collect and Average the Direct Matrix $\boldsymbol{A_d}$

This research collects the data by interviewing ten senior NPs marketing managers to create direct matrices $\boldsymbol{A_d}$, *d*=1, 2, ⋯, *n*, where *n* is the number of respondents. In $\boldsymbol{A_d}$, C_n is the n^{th} cluster, and e_{nm} shows the m^{th} element in n^{th} cluster, shown as Eq. (8). In Eq. (8), $\boldsymbol{K_{ij}^d}$ are the submatrices of $\boldsymbol{A_d}$ which mean the influence of the elements in the j^{th} cluster impose to the i^{th} cluster. Each element in $\boldsymbol{K_{ij}^d}$ represented as κ_{ij}^d, expresses the initial direct effects that criterion gives to and received from the other criteria.

$$\boldsymbol{A_d} = \begin{array}{c} \\ C_1 \\ \\ \\ C_2 \\ \\ \vdots \\ C_n \\ \\ \end{array} \begin{array}{c} \begin{array}{cccc} e_{11} & e_{12} & \cdots & e_{1m_1} \end{array} \\ \begin{bmatrix} \boldsymbol{K_{11}^d} & \boldsymbol{K_{12}^d} & \cdots & \boldsymbol{K_{1n}^d} \\ \boldsymbol{K_{21}^d} & \boldsymbol{K_{22}^d} & \cdots & \boldsymbol{K_{2n}^d} \\ \vdots & \vdots & \ddots & \vdots \\ \boldsymbol{K_{n1}^d} & \boldsymbol{K_{n2}^d} & \cdots & \boldsymbol{K_{nn}^d} \end{bmatrix} \end{array} \begin{array}{l} \\ \begin{array}{c} e_{21} \\ e_{22} \\ \vdots \\ e_{2m_2} \end{array} \\ \\ \\ \begin{array}{c} e_{n1} \\ e_{n2} \\ \vdots \\ e_{nm_n} \end{array} \end{array} \tag{8}$$

Step A2: Calculate the Average Direct Matrix $\boldsymbol{A^A}$

The average matrix $\boldsymbol{A^A}$ is created by calculating the average of the correspondent elements in each direct matrix $\boldsymbol{A_d}$. Each element of $\boldsymbol{A^A}$ is denoted as a_{ij}^A, shown as Eq. (9), where n represents the number of direct matrices $\boldsymbol{A_d}$ and m expresses the number of criteria.

$$\boldsymbol{A^A} = \begin{bmatrix} a_{11}^A & \cdots & a_{1j}^A & \cdots & a_{1m}^A \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ a_{i1}^A & \cdots & a_{ij}^A & \cdots & a_{im}^A \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ a_{m1}^A & \cdots & a_{mj}^A & \cdots & a_{mm}^A \end{bmatrix}, \text{where } a_{ij}^A = \frac{\sum_{d=1}^{m} \kappa_{ij}^d}{n} \tag{9}$$

Step A3: Derive the Total Influence Matrix $\boldsymbol{T^A}$

Normalizing $\boldsymbol{A^A}$ by Eqs. (10) and (11), obtains the initial direct-relation matrix $\boldsymbol{X^A}$. In $\boldsymbol{X^A}$, all the principal diagonal

elements equal to zero.

$$s^A = min\left[\frac{1}{max\sum_{j=1}^{n}\left[a_{ij}^A\right]}, \frac{1}{max\sum_{i=1}^{n}\left[a_{ij}^A\right]}\right] \tag{10}$$

$$X^A = s^A \times A^A \tag{11}$$

The total influence matrix T^A is calculated by Eq. (12), where I represents an identity matrix. In T^A, the element t_{ij}^A denotes the direct or indirect influence from criterion i to criterion j. $\lim_{k\to\infty} X^{A^k} = [0]_{n\times n}$, the total-influence matrix is listed as follows:

$$T^A = \lim_{k\to\infty}\left(X^A + X^{A^2} + X^{A^3} + \cdots + X^{A^k}\right) = \lim_{k\to\infty} X^A\left(I + X^A + X^{A^2} + X^{A^3} + \cdots + X^{A^{k-1}}\right) = X^A(I - X^A)^{-1} \tag{12}$$

Step A4: Normalize the Total Influence Matrix T_R^A

The normalized total influence matrix T_R^A is gained by normalizing T^A, shown as Eq. (13).

$$T_R^A = \begin{array}{c} \\ C_1 \\ C_2 \\ \vdots \\ C_n \end{array}\begin{array}{c} \begin{array}{cccc} e_{11} \cdots e_{1m_1} & e_{21} \cdots e_{2m_2} & \cdots & e_{n1} \cdots e_{nm_n} \end{array} \\ \begin{bmatrix} T_R^{A\,11} & T_R^{A\,12} & \cdots & T_R^{A\,1n} \\ T_R^{A\,21} & T_R^{A\,22} & \cdots & T_R^{A\,2n} \\ \vdots & \vdots & \ddots & \vdots \\ T_R^{A\,n1} & T_R^{A\,n2} & \cdots & T_R^{A\,nn} \end{bmatrix} \end{array} \tag{13}$$

To derive T_R^A, firstly divide each element in T^A into submatrices, then calculate the sum of all the elements in each submatrix, and finally divide every element by the summation. For example, the calculation process of $T_R^{A\,11}$ is shown as Eqs. (14) and (15).

$$c_{e_1}^{11} = \sum_{i=1}^{m_1} t_{e_{1i}}^{A\,11} \tag{14}$$

$$T_R^{A\,11} = \begin{bmatrix} t_{11}^{A\,11}/c_{e_1}^{11} & t_{12}^{A\,11}/c_{e_1}^{11} & \cdots & t_{1m_1}^{A\,11}/c_{e_1}^{11} \\ \vdots & \vdots & \ddots & \vdots \\ t_{21}^{A\,11}/c_{e_2}^{11} & t_{22}^{A\,11}/c_{e_2}^{11} & \cdots & t_{2m_1}^{A\,11}/c_{e_2}^{11} \\ \vdots & \vdots & \ddots & \vdots \\ t_{m_1 1}^{A\,11}/c_{em_1}^{11} & t_{m_1 2}^{A\,11}/c_{em_1}^{11} & \cdots & t_{m_1 m_1}^{A\,11}/c_{em_1}^{11} \end{bmatrix} =$$

$$\begin{bmatrix} t_{R_{11}}^{A\,11} & t_{R_{12}}^{A\,11} & \cdots & t_{R_{1m_1}}^{A\,11} \\ \vdots & \vdots & \ddots & \vdots \\ t_{R_{21}}^{A\,11} & t_{R_{22}}^{A\,11} & \cdots & t_{R_{2m_1}}^{A\,11} \\ \vdots & \vdots & \ddots & \vdots \\ t_{R_{m_1 1}}^{A\,11} & t_{R_{m_1 2}}^{A\,11} & \cdots & t_{R_{m_1 m_1}}^{A\,11} \end{bmatrix} \tag{15}$$

Step A5: Obtain the Unweighted Super-Matrix W

Transpose T_R^A to gain the unweighted super-matrix W, shown as Eq. (16) for the preparation to calculate the weighted super-matrix W_W.

$$W = \begin{array}{c} \\ C_1 \\ C_2 \\ \vdots \\ C_n \end{array}\begin{array}{c} \begin{array}{cccc} C_1 & C_2 & \cdots & C_n \end{array} \\ \begin{bmatrix} W_{11} & W_{12} & \cdots & W_{1n} \\ W_{21} & W_{22} & \cdots & W_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ W_{n1} & W_{n2} & \cdots & W_{nn} \end{bmatrix} \end{array} \tag{16}$$

Step A6: Obtain the Weighted Super-Matrix W_W

To modify the original assumption of each cluster with equal weight in ANP proposed by Saaty (1996), this research introduces cluster weights T^K established in DEMATEL to weight the total influence matrix T_R^K by normalizing T^K through Eqs. (17) and (18).

$$d_i = \sum_{j=1}^{n} t_{ij}^K \tag{17}$$

$$T_R^K = \begin{bmatrix} t_{11}^K/d_1 & \cdots & t_{1j}^K/d_1 & \cdots & t_{1n}^K/d_1 \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{i1}^K/d_i & \cdots & t_{ij}^K/d_i & \cdots & t_{in}^K/d_i \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{n1}^K/d_n & \cdots & t_{nj}^K/d_n & \cdots & t_{nn}^K/d_n \end{bmatrix} = \begin{bmatrix} t_{R_{11}}^K & \cdots & t_{R_{1j}}^K & \cdots & t_{R_{1n}}^K \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{R_{i1}}^K & \cdots & t_{R_{ij}}^K & \cdots & t_{R_{in}}^K \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{R_{n1}}^K & \cdots & t_{R_{nj}}^K & \cdots & t_{R_{nn}}^K \end{bmatrix} \tag{18}$$

Multiply the unweighted super-matrix W by the transposed normalized total influence matrix $T_R^{K'}$, i.e., $T_R^{K'} \times W$ to gain the weighted super-matrix W_W as Eq. (19).

$$W_w = \begin{bmatrix} t_{R_{11}}^K \times W_{11} & \cdots & t_{R_{j1}}^K \times W_{1j} & \cdots & t_{R_{n1}}^K \times W_{1n} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{R_{1i}}^K \times W_{i1} & \cdots & t_{R_{ji}}^K \times W_{ij} & \cdots & t_{R_{ni}}^K \times W_{in} \\ \vdots & \ddots & \vdots & \ddots & \vdots \\ t_{R_{1n}}^K \times W_{n1} & \cdots & t_{R_{jn}}^K \times W_{nj} & \cdots & t_{R_{nn}}^K \times W_{nn} \end{bmatrix} \tag{19}$$

Step A7: Obtain the Limited Super-Matrix W_W^* and Rank the DANP Weight

In Eq. (20), raise the weighted super-matrix W_W to a sufficiently large power k until it converges to a long-term stable super-matrix which is named limited super-matrix W_W^* to obtain the global priority vector which is called DANP influential weights (Chen & Lin, 2018).

$$\lim_{k\to\infty} W_W^k \tag{20}$$

Based on W_W^*, the rank of DANP weights can be utilized to determine overall priorities of criteria.

4. Research Results and Explanation

Following the data processing steps outlined in section 3.1and 3.2, this research firstly analyzes the data which collected from ten scholars/experts by DEMATEL to examine the influence relationships among four clusters and then rank the priority of the thirteen criteria for marketing NPs from ten senior marketing managers by ANP.

4.1 The Relationships among Clusters

In DEMATEL stage, this research collects the opinions and suggestions of ten scholars/experts on the influence relationships between four clusters by questionnaires. The average direct-relation matrix A^K based on Eq. (2), shown as Table 4.1.

Table 4.1 The Average Direct-Relation Matrix A^K

Cluster	S	P	M	E
S	0	3.3	3.6	2.9
P	2.9	0	3.6	2.7
M	2.7	3.5	0	3.1
E	3.4	3.3	3.3	0

Normalize the initial average direct-relation matrix A^K by Eqs. (3) and (4), receives the normalized average direct-relation matrix X^K, shown as Table 4.2.

Table 4.2 The Normalized Average Direct-Relation Matrix $\boldsymbol{X^K}$

Cluster	S	P	M	E
S	0	0.31429	0.34286	0.27619
P	0.27619	0	0.34286	0.25714
M	0.25714	0.33333	0	0.29523
E	0.32381	0.31429	0.31429	0

The total influence matrix $\boldsymbol{T^K}$ is derived by Eq. (5) as Table 4.3.

Table 4.3 The Total Influence Matrix $\boldsymbol{T^K}$

Cluster	S	P	M	E
S	2.28215	2.74766	2.83766	2.45081
P	2.38893	2.38844	2.71384	2.33234
M	2.39827	2.65992	2.48031	2.37388
E	2.56734	2.79063	2.86558	2.27269

By Eqs. (6) and (7), compute the values of $r_i + c_i$ and $r_i - c_i$. The gives and received influences of the four clusters are shown as Table 4.4.

Table 4.4 The Gives and Received Influences of the Four Clusters

Cluster	r_i	c_i	$r_i + c_i$	$r_i - c_i$
S	10.318	9.637	19.955	0.682
P	9.824	10.587	20.41	-0.763
M	9.912	10.897	20.81	-0.985
E	10.496	9.43	19.926	1.067

A threshold value α is established to filter minor influence among the four clusters in matrix $\boldsymbol{T^K}$. If the element value in $\boldsymbol{T^K}$ is less than α, an asterisk "*" is marked at the upper-right corner to express that cluster with minor influence, shown as Table 4.5.

Table 4.5 The Total Influence Matrix $\boldsymbol{T^K}$ (α)

Cluster	S	P	M	E
S	2.28215*	2.74766	2.83766	2.45081*
P	2.38893*	2.38844*	2.71384	2.33234*
M	2.39827*	2.65992	2.48031*	2.37388*
E	2.56734	2.79063	2.86558	2.27269*

This research illustrates the cause-effect diagram to comprehend the interactions among four clusters based on the information in Table 4.4, shown as Fig. 4.2. In Fig. 4.2, this research divides the four clusters into two part along with the point 20.20 on horizontal axis. On the left hand side, the group of External Environment Cluster and Marketing Strategy Cluster has higher positive $r_i - c_i$ value but with lower $r_i + c_i$ value; While the group of Marketing Planning Cluster and Marketing Mix Cluster on the right hand side has lower negative $r_i - c_i$ value but higher $r_i + c_i$ value.

Fig. 4.2 Cause-Effect Diagram of the Four Clusters

At the first glance of Fig. 4.2, it can be seen that External Environment Cluster has the highest positive $r_i - c_i$ value and the lowest $r_i + c_i$ value. It means that the External Environment Cluster has the strongest net influence on the other

clusters which is called “main cause-factor”. On the other hand, Marketing Mix Cluster has the lowest negative $r_i - c_i$ value but the highest $r_i + c_i$ value. It denotes that Marketing Mix Cluster has the largest total influence and plays as the central role among the four clusters. Marketing Mix Cluster can therefore be seen as “main effect-factor” owing to its least net influence.

The above results indicate that the group of External Environment Cluster and Marketing Strategy Cluster impacts on the other group more than that affected. It implies that the companies have to considered the group of External Environment Cluster and Marketing Strategy Cluster more proactively when marketing NPs. Because the group of Marketing Planning Cluster and Marketing Mix Cluster is strongly influenced by the other group. The companies need to pay more attention on observing the external environment and marketing strategy they formulate before adopting marketing planning and marketing mix activities, even Marketing Mix Cluster is the significant revenue resource for the companies’ NPs marketing.

For further evaluating successful NP marketing, the influence diagram of the four clusters is decipted as Fig. 4.3. Observe Fig. 4.3, External Environment Cluster radiates significant influences on the other clusters. It indicates that External Environment Cluster is a “source node”. While Marketing Mix Cluster and Marketing Planning Cluster receive significant influences from the other clusters, which means that Marketing Mix Cluster and Marketing Planning Cluster are “sunk nodes”. The above results imply that External Environment Cluster is the main influence source and constrains the other three clusters when companies engage in NP marketing. On the other hand, Marketing Mix Cluster and Marketing Planning Cluster are the influence destination and do not be considered firstly as the major factors by the companies before devoting in marketing NPs. Furthermore, all the four clusters have minor influence loops (weak self-influence effect) which indicates that each criterion in clusters is relatively mutual independent in these four clusters.

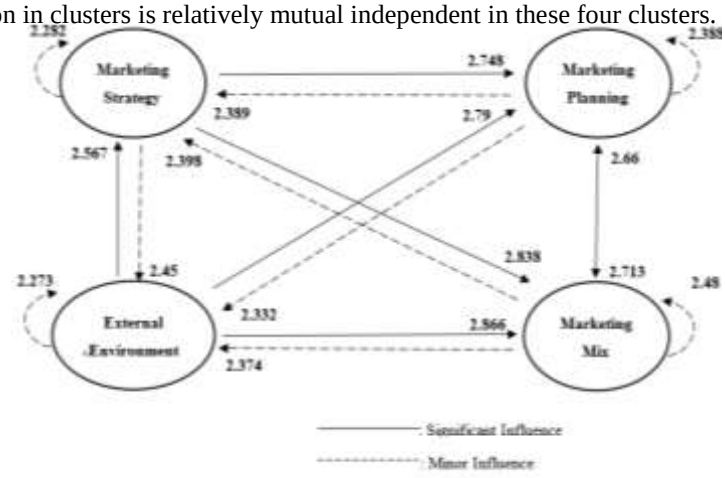

Fig. 4.3 Influence Diagram of the Four Clusters

4.2 Appling ANP to Measure the Priority of Criteria

In the stage of ANP, this research collects the data by interviewing ten senior managers in ten famous companies face to face who have rich experience in marketing NPs. The ten senior managers can thus offer more reliable information based on their understanding in NPs’ marketing. Each respondent was asked to answer a questionnaire by pairwise comparison problems to establish the relative importance of the criteria, then obtain the ten direct matrices $\boldsymbol{A_d}$, d = 1, 2, 3, …, 10. Table 4.6 shows an example of direct matrix $\boldsymbol{A_d}$.

Table 4.6 The Example of Direct Matrix A_d

Criteria	S1	S2	P1	P2	P3	P4	M1	M2	M3	M4	E1	E2	E3
S1	1.000	5.882	7.143	2.000	2.000	0.143	1.000	0.500	1.000	7.143	5.882	4.000	2.000
S2	0.170	1.000	1.000	0.250	0.200	0.500	0.200	0.200	0.167	0.167	0.200	0.143	0.143
P1	0.140	1.000	1.000	1.000	0.500	4.000	0.200	0.200	0.200	0.200	3.030	0.333	2.000
P2	0.500	4.000	1.000	1.000	1.000	5.000	1.000	0.500	2.000	2.000	2.000	2.000	2.000
P3	0.500	5.000	2.000	1.000	1.000	5.000	1.000	1.000	2.000	1.000	3.030	2.000	2.000
P4	7.000	2.000	0.250	0.200	0.200	1.000	0.250	0.250	0.200	0.200	0.333	0.333	0.500
M1	1.000	5.000	5.000	1.000	1.000	4.000	1.000	1.000	4.000	2.000	3.030	3.030	3.030
M2	2.000	5.000	5.000	2.000	1.000	4.000	1.000	1.000	5.882	2.000	4.000	4.000	5.882
M3	1.000	6.000	5.000	0.500	0.500	5.000	0.250	0.170	1.000	0.200	0.200	0.333	1.000
M4	0.140	6.000	5.000	0.500	1.000	5.000	0.500	0.500	5.000	1.000	4.000	7.692	5.000
E1	0.170	5.000	0.330	0.500	0.330	3.000	0.330	0.250	5.000	0.250	1.000	5.000	5.000
E2	0.250	7.000	3.000	0.500	0.500	3.000	0.330	0.250	3.000	0.130	0.200	1.000	5.882
E3	0.500	7.000	0.500	0.500	0.500	2.000	0.330	0.170	1.000	0.200	0.200	0.170	1.000

4.2.1 Calculate the Average Direct Matrix A^A

Adopt Eq. (9), the average direct matrix A^A is obtained by averaging the ten direct matrices, depicted as Table 4.7.

Table 4.7 The Average Direct Matrix A^A

Criteria	S1	S2	P1	P2	P3	P4	M1	M2	M3	M4	E1	E2	E3
S1	1.000	1.087	2.837	2.614	3.011	3.381	3.614	2.472	3.597	2.989	2.380	2.471	2.119
S2	4.780	1.000	2.925	4.300	4.600	4.397	4.900	4.600	3.563	3.047	5.100	4.914	2.533
P1	2.390	0.982	1.000	2.455	3.238	2.144	3.245	2.997	3.144	3.383	2.579	2.564	1.411
P2	2.190	0.442	2.160	1.000	2.613	1.468	2.759	2.195	2.647	1.897	3.063	2.427	1.844
P3	2.273	0.452	1.535	1.355	1.000	1.331	2.412	3.034	2.253	3.383	3.408	3.122	0.744
P4	1.745	1.380	2.425	3.670	3.675	1.000	3.075	2.263	1.988	3.227	2.325	3.160	2.747
M1	1.197	0.375	1.249	2.057	2.045	2.089	1.000	2.465	2.888	2.664	3.228	3.300	2.316
M2	1.820	0.385	1.481	1.514	1.587	3.045	1.857	1.000	1.027	2.366	2.372	2.019	0.911
M3	1.506	1.361	1.676	1.698	1.627	3.515	1.686	2.950	1.000	2.936	2.822	2.731	2.453
M4	1.677	1.683	0.852	2.383	0.898	1.897	2.246	1.358	1.723	1.000	2.149	2.187	0.697
E1	1.919	0.418	1.734	1.396	1.200	2.074	1.601	1.815	2.139	2.488	1.000	0.776	0.647
E2	2.054	1.032	1.882	2.116	2.357	1.984	1.328	2.934	1.673	2.913	3.557	1.000	0.653
E3	2.190	1.112	2.122	2.000	2.212	1.412	1.330	2.534	1.362	2.615	2.715	3.339	1.000

4.2.2 Derive the Total Influence Matrix T^A

Firstly, normalize A^A by Eqs. (10) and (11) to obtain the initial direct-relation matrix X^A as Table 4.8. Then, derive the total influence matrix T^A by substituting X^A into Eq. (12) as Table 4.9.

Table 4.8 The Initial Direct-Relation Matrix X^A

Criteria	S1	S2	P1	P2	P3	P4	M1	M2	M3	M4	E1	E2	E3
S1	0.020	0.021	0.056	0.052	0.059	0.067	0.071	0.049	0.071	0.059	0.047	0.049	0.042
S2	0.094	0.020	0.058	0.085	0.091	0.087	0.097	0.091	0.070	0.060	0.101	0.097	0.050
P1	0.047	0.019	0.020	0.048	0.064	0.042	0.064	0.059	0.062	0.067	0.051	0.051	0.028
P2	0.043	0.009	0.043	0.020	0.052	0.029	0.054	0.043	0.052	0.037	0.060	0.048	0.036
P3	0.045	0.009	0.030	0.027	0.020	0.026	0.048	0.060	0.044	0.067	0.067	0.062	0.015
P4	0.034	0.027	0.048	0.072	0.073	0.020	0.061	0.045	0.039	0.064	0.046	0.062	0.054
M1	0.024	0.007	0.025	0.041	0.040	0.041	0.020	0.049	0.057	0.053	0.064	0.065	0.046
M2	0.036	0.008	0.029	0.030	0.031	0.060	0.037	0.020	0.020	0.047	0.047	0.040	0.018
M3	0.030	0.027	0.033	0.034	0.032	0.069	0.033	0.058	0.020	0.058	0.056	0.054	0.048
M4	0.033	0.033	0.017	0.047	0.018	0.037	0.044	0.027	0.034	0.020	0.042	0.043	0.014
E1	0.038	0.008	0.034	0.028	0.024	0.041	0.032	0.036	0.042	0.049	0.020	0.015	0.013
E2	0.041	0.020	0.037	0.042	0.047	0.039	0.026	0.058	0.033	0.058	0.070	0.020	0.013
E3	0.043	0.022	0.042	0.039	0.044	0.028	0.026	0.050	0.027	0.052	0.054	0.066	0.020

Table 4.9 The Total Influence Matrix T^A

Criteria	S1	S2	P1	P2	P3	P4	M1	M2	M3	M4	E1	E2	E3
S1	0.074	0.047	0.105	0.110	0.120	0.128	0.134	0.116	0.131	0.133	0.123	0.119	0.042
S2	0.174	0.056	0.133	0.172	0.181	0.179	0.191	0.190	0.161	0.172	0.214	0.199	0.050
P1	0.097	0.043	0.066	0.102	0.119	0.100	0.122	0.121	0.118	0.135	0.122	0.115	0.028
P2	0.085	0.028	0.081	0.065	0.098	0.078	0.103	0.096	0.099	0.096	0.119	0.101	0.036
P3	0.085	0.028	0.067	0.071	0.064	0.074	0.094	0.109	0.090	0.122	0.124	0.112	0.015
P4	0.088	0.051	0.095	0.128	0.130	0.079	0.121	0.110	0.098	0.135	0.121	0.129	0.054
M1	0.066	0.027	0.063	0.085	0.086	0.089	0.067	0.100	0.102	0.110	0.122	0.117	0.046
M2	0.070	0.024	0.061	0.068	0.070	0.098	0.077	0.062	0.059	0.094	0.094	0.083	0.018
M3	0.075	0.048	0.075	0.084	0.083	0.120	0.086	0.113	0.069	0.119	0.118	0.111	0.048
M4	0.068	0.049	0.049	0.085	0.058	0.077	0.085	0.070	0.073	0.067	0.091	0.087	0.014
E1	0.068	0.023	0.062	0.062	0.059	0.077	0.069	0.074	0.077	0.091	0.063	0.055	0.013
E2	0.081	0.039	0.074	0.085	0.091	0.086	0.075	0.107	0.079	0.113	0.126	0.071	0.013
E3	0.085	0.041	0.080	0.084	0.090	0.076	0.075	0.101	0.074	0.108	0.112	0.117	0.020

4.2.3 Normalize the Total Influence Matrix T_R^A

Normalize the total influence matrix T^A by Eqs. (14) and (15), receive the normalized total influence matrix T_R^A as Table 4.10.

Table 4.10 The Normalized Total Influence Matrix T_R^A

Criteria	S1	S2	P1	P2	P3	P4	M1	M2	M3	M4	E1	E2	E3
S1	0.613	0.387	0.227	0.239	0.259	0.276	0.260	0.226	0.254	0.260	0.378	0.364	0.258
S2	0.755	0.245	0.200	0.259	0.273	0.269	0.267	0.267	0.226	0.241	0.407	0.379	0.214
P1	0.695	0.305	0.170	0.265	0.307	0.259	0.246	0.244	0.237	0.273	0.402	0.379	0.219
P2	0.751	0.249	0.252	0.202	0.304	0.242	0.261	0.243	0.252	0.244	0.413	0.350	0.237
P3	0.751	0.249	0.243	0.256	0.232	0.268	0.227	0.263	0.216	0.294	0.441	0.398	0.162
P4	0.632	0.368	0.221	0.296	0.301	0.182	0.261	0.237	0.211	0.291	0.352	0.377	0.271
M1	0.707	0.293	0.195	0.264	0.266	0.275	0.178	0.264	0.269	0.290	0.386	0.371	0.243
M2	0.745	0.255	0.205	0.229	0.236	0.330	0.264	0.212	0.203	0.321	0.424	0.375	0.201
M3	0.611	0.389	0.207	0.231	0.230	0.332	0.222	0.292	0.179	0.307	0.379	0.356	0.264
M4	0.582	0.418	0.183	0.315	0.214	0.288	0.288	0.237	0.248	0.227	0.416	0.397	0.188
E1	0.746	0.254	0.240	0.238	0.226	0.296	0.221	0.237	0.248	0.294	0.403	0.356	0.241
E2	0.676	0.324	0.220	0.254	0.271	0.255	0.200	0.287	0.211	0.302	0.524	0.295	0.181
E3	0.675	0.325	0.242	0.256	0.273	0.229	0.210	0.282	0.205	0.302	0.400	0.420	0.180

4.2.4 Obtain the Unweighted Super-Matrix W

Transpose T_R^A to gain the unweighted super-matrix W by Eq. (16) as Table 4.11.

Table 4.11 The Unweighted Super-Matrix W

Criteria	S1	S2	P1	P2	P3	P4	M1	M2	M3	M4	E1	E2	E3
S1	0.613	0.387	0.227	0.239	0.259	0.276	0.260	0.226	0.254	0.260	0.378	0.364	0.258
S2	0.755	0.245	0.200	0.259	0.273	0.269	0.267	0.267	0.226	0.241	0.407	0.379	0.214
P1	0.695	0.305	0.170	0.265	0.307	0.259	0.246	0.244	0.237	0.273	0.402	0.379	0.219
P2	0.751	0.249	0.252	0.202	0.304	0.242	0.261	0.243	0.252	0.244	0.413	0.350	0.237
P3	0.751	0.249	0.243	0.256	0.232	0.268	0.227	0.263	0.216	0.294	0.441	0.398	0.162
P4	0.632	0.368	0.221	0.296	0.301	0.182	0.261	0.237	0.211	0.291	0.352	0.377	0.271
M1	0.707	0.293	0.195	0.264	0.266	0.275	0.178	0.264	0.269	0.290	0.386	0.371	0.243
M2	0.745	0.255	0.205	0.229	0.236	0.330	0.264	0.212	0.203	0.321	0.424	0.375	0.201
M3	0.611	0.389	0.207	0.231	0.230	0.332	0.222	0.292	0.179	0.307	0.379	0.356	0.264
M4	0.582	0.418	0.183	0.315	0.214	0.288	0.288	0.237	0.248	0.227	0.416	0.397	0.188
E1	0.746	0.254	0.240	0.238	0.226	0.296	0.221	0.237	0.248	0.294	0.403	0.356	0.241
E2	0.676	0.324	0.220	0.254	0.271	0.255	0.200	0.287	0.211	0.302	0.524	0.295	0.181
E3	0.675	0.325	0.242	0.256	0.273	0.229	0.210	0.282	0.205	0.302	0.400	0.420	0.180

4.2.5 Obtain the Weighted Super-Matrix W_W

By Eqs. (17) and (18), employ the four clusters' weights in DEMATEL to normalize the T^K matrix which can obtain the normalized total influence matrix T_R^K as Table 4.12. Adopt Eq. (19), multiply the unweighted super-matrix W by the transposed normalized total influence matrix $T_R^{K'}$ to gain the weighted super-matrix W_W as Table 4.13.

Table 4.12 The Normalized Total Influence Matrix T_R^K

Cluster	S	P	M	E
S	0.221	0.266	0.275	0.238
P	0.243	0.243	0.276	0.237
M	0.242	0.268	0.250	0.239
E	0.245	0.266	0.273	0.217

Table 4.13 The Weighted Super-Matrix W_W

Criteria	**S1**	**S2**	**P1**	**P2**	**P3**	**P4**	**M1**	**M2**	**M3**	**M4**	**E1**	**E2**	**E3**
S1	0.136	0.167	0.169	0.183	0.183	0.154	0.171	0.180	0.148	0.141	0.183	0.165	0.165
S2	0.086	0.054	0.074	0.061	0.060	0.089	0.071	0.062	0.094	0.101	0.062	0.079	0.080
P1	0.060	0.053	0.041	0.061	0.059	0.054	0.052	0.055	0.055	0.049	0.064	0.059	0.064
P2	0.064	0.069	0.064	0.049	0.062	0.072	0.071	0.061	0.062	0.085	0.063	0.068	0.068
P3	0.069	0.073	0.075	0.074	0.056	0.073	0.071	0.063	0.062	0.057	0.060	0.072	0.072
P4	0.073	0.072	0.063	0.059	0.065	0.044	0.074	0.089	0.089	0.077	0.079	0.068	0.061
M1	0.072	0.073	0.068	0.072	0.063	0.072	0.044	0.066	0.056	0.072	0.060	0.055	0.057
M2	0.062	0.073	0.067	0.067	0.073	0.065	0.066	0.053	0.073	0.059	0.065	0.078	0.077
M3	0.070	0.062	0.066	0.070	0.060	0.058	0.067	0.051	0.045	0.062	0.068	0.058	0.056
M4	0.071	0.066	0.075	0.067	0.081	0.080	0.072	0.080	0.077	0.057	0.080	0.082	0.083
E1	0.090	0.097	0.095	0.098	0.105	0.083	0.092	0.102	0.091	0.100	0.087	0.113	0.087
E2	0.087	0.090	0.090	0.083	0.094	0.090	0.089	0.090	0.085	0.095	0.077	0.064	0.091
E3	0.061	0.051	0.052	0.056	0.038	0.064	0.058	0.048	0.063	0.045	0.052	0.039	0.039

4.2.6 Obtain the Limited Super-Matrix W_W^* and Rank the DANP Weights

By Eq. (20), raise the weighted super-matrix W_W until it converges to a long-term stable condition to receive the limited super-matrix W_W^* as Table 4.14.

Table 4.14 The Limited Super-Matrix W_W^*

Criteria	**S1**	**S2**	**P1**	**P2**	**P3**	**P4**	**M1**	**M2**	**M3**	**M4**	**E1**	**E2**	**E3**
S1	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162
S2	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076	0.076
P1	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
P2	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
P3	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067
P4	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071
M1	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065
M2	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067	0.067
M3	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062
M4	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
E1	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
E2	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086
E3	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052

In Table 4.14, the steady values in each row of W_W^* are the global weights of criteria. Rank the global weights can gain the priority of each criterion for successful marketing NPs. Sum up the global weights of criteria in the same cluster can receive the local weight of each cluster. Then, divide the local weight by the global weights of criteria to obtain local weights of criteria. The local weights of criteria denote relative importance in the four clusters. The weights and rank of criteria are demonstrated in Table 4.15.

From the local weight in Table 4.15, the most important criterion in each cluster are as follows: Brand Proliferation

Criterion in the Marketing Strategy Cluster; Product Launch Criterion in the Marketing Planning Cluster; Promotion Criterion in the Marketing Mix Cluster; and Customer Preferences Criterion in the External Environment Cluster. The global weight in Table 4.15 reveals the top three priority criteria are Brand Proliferation Criterion, Customer Preferences Criterion, and Market Competition Criterion, the last three priority criteria are Place Criterion, Market Segmentation Criterion, and Government Policy Criterion, respectively.

Table 4.15 Weights and Rank of the Evaluation Criteria

Cluster	Criteria	Local Weight	Global Weight	Rank
Marketing Strategy	(S1) Brand Proliferation	0.68265	0.16243	1
	(S2) Logistics	0.31734	0.07551	4
	Subtotal	**0.23794**		
Marketing Strategy	(P1) Market Segmentation	0.21706	0.05659	12
	(P2) Targeting	0.25278	0.06590	9
	(P3) Positioning	0.25864	0.06743	7
	(P4) Product Launch	0.27150	0.07078	6
	Subtotal	**0.26070**		
Marketing Mix	(M1) Product	0.24104	0.06465	10
	(M2) Price	0.24999	0.06705	8
	(M3) Place	0.23101	0.06196	11
	(M4) Promotion	0.27795	0.07455	5
	Subtotal	**0.26821**		
External Environment	(E1) Customer Preferences	0.40797	0.09511	2
	(E2) Market Competition	0.36812	0.08582	3
	(E3) Government Policy	0.22390	0.05220	13
	Subtotal	**0.23313**		

To clarify the rationale of these conclusions, this research further referred and utilized the perspectives of the respondents to explore the meanings behind the top three and last three criteria.

The description of the top three priority criteria is listed as follows:

(1) Brand Proliferation Criterion: Brand proliferation means the companies can utilize the brand image that customers had established from past consumption experience to enhance the customers' acceptance of NPs. Interviewees M2, M3, and M6 indicated that successful brand proliferation will encourage customers to consider and try to purchase NPs, then generate opportunities for the companies to penetrate NPs into target markets rapidly. Interviewees M4 and M5 concluded that brand proliferation creates customers' trust, thereby increasing market share of NPs. In addition, interviewees M1 and M5 mentioned that brand proliferation produces diverse product lines that can satisfy a wider range of customer preferences derived from the same brand. When facing NPs, customers always feel strange for the products they have never met before, the best practice for the companies is to implement brand proliferation to reduce customers' uncertainty for NPs by established brand image to increase customers' trust for NPs and further raise market share. Therefore, Brand Proliferation Criterion is ranked at the first priority in the successful NPs marketing criteria.

(2) Customer Preferences Criterion: In today's rapidly changing market, the strategies which companies articulate for launching and marketing NPs are heavily influenced by customer preferences. The companies must collect customer preferences based on the characteristics of NPs, and select appropriate target markets to formulate marketing strategies. Interviewees M1, M3, and M9 expressed that customers' consumption styles and tastes are varied and changed swiftly. Even in prices, customers still have different preferences. Companies have to engage in customers preferences orientation when positioning and launching NPs (interviewee M4). It is not easy to collect customers' real-time information. For better understanding customer preferences, interviewees suggested that the company can employ qualitative/quantitative surveys

(M2) or utilize big data technologies to gather relevant information (M3) on customers preferences. Once the companies can collect customer preferences precisely and rapidly, they can provide suitable NPs to fit the needs of right customers, then promote sales volume and foster customers' loyalty. However, the change of customer preferences is constant, it is hard for the companies to grasp them accurately and promptly. Therefore, Customer Preferences Criterion is ranked at the second place in the successful NPs marketing criteria.

(3) Market Competition Criterion: After the launch of NPs, the companies inevitably face competition in the marketplace. Market with fierce competition reveals that this market must have superior attraction for many companies to invest their resources to join in the contest. The companies have to analyze the market and competitors for adopting appropriate competition strategies (e.g., differentiation, low cost, etc.) hopefully to stand out in the competition. Interviewees M2, M7, and M8 indicated that the companies can gather the information of competitors' activities in the market for analyzing and clarifying their current competitive position. Interviewees M1 and M4 mentioned that different competitors bring in dissimilar challenges which result in uncertainty competition context. When the companies decide to launch NPs, they may adopt differentiation strategies, e.g., developing diversified or environment friendly products, to segment themselves from competitive products and reach a well market position for higher chance of successfully marketing NPs. On the other hand, interviewees M3, M5, and M6 pointed out that companies also may consider the strategy of fast followers. They can observe competitors' behaviors before formulating effective response strategies. Therefore, when facing market competition, companies must pull all their efforts to boost current competitive position, identify their competitive advantages, formulate corresponding marketing strategies for NPs to strengthen competitiveness. As competitors may never stand still and will also adopt corresponding competitive strategies, market competition will thus be characterized by dynamic uncertainty in a long-term. Because the companies cannot control the entire competition environment unilateral, Market Competition Criterion is ranked at the third position in the successful NPs marketing criteria.

The description of the last three priority criteria is listed as follows:

(1) Place Criterion: Places are the channels, paths, or intermediaries where the desired or potential customers may contact and purchase NPs. For companies, places can promote the opportunity to trade NPs, but the remote places will also constraint NPs marketing (M3). Interviewee M9 stressed that if the high install cost of places is beyond the companies can afford, it will restrict NPs marketing activities and hurt the companies' subsistence in the long run. Besides, the choice of places is affected by the characteristics of NPs. Interviewees M1 and M4 stated that there are limited proper places where some high price NPs can be demonstrated, it will further confine the chance to display NPs and thereby decrease the performance of NPs marketing. Therefore, Place Criterion can only be ranked at the last third (eleventh) priority in the successful NPs marketing criteria.

(2) Market Segmentation Criterion: Market segmentation assists the companies to identify different customers' consumption styles for NPs. Interviewees M1, M3, M5, and M6 all agreed that some NPs may focus on extensive coverage while the other NPs will just posit in specific exclusive customers. In either case, market segmentation can do nothing to facilitate NPs marketing. Interviewees M3 and M4 argued that if the segment market of NPs overlaps the other homogeneity products, the customers will choose their familiar products instead of NPs. In addition, the companies may not create clear position before launching NPs, if they take hasty decision in market segmentation, it will in contrast constraint the exposure of NPs (N9). Therefore, Market Segmentation Criterion does not have the aggressive effect on NPs marketing and can only be listed at the second lowest (twelfth) priority in successful NPs marketing criteria.

(3) Government Policy Criterion: Government can adopt support policies (e.g., financial assistance, subsidy, and infrastructure facilities offering) to facilitate NPs marketing. For interviewees M1, M3, M4, M5, and M10, they believe that

government always plays the role of regulator and imposes directives on NPs marketing, thus restricts the information of NPs delivers to customers. Interviewee M3 mentioned that the major objectives of government intervention confine on consumer and environment protection. In general, current government's industrial policies of NPs put more emphasis on developing and manufacturing stages but neglect the stage of marketing. In addition, interviewees M1, M4, and M9 stressed that government will only aid some specific industries or enterprises based on the planned economic development policies. Moreover, government always lack of sensitive in the trend of technology progress, this existed responsive lag will hinder the government to make proper policies to satisfy the needs of NPs marketing timely. Therefore, Government Policy Criterion is ranked at the last (thirteenth) priority while engaging in successful NPs marketing.

5. Conclusion

NPs play important roles in enhancing people's quality of lifestyle by providing new usage goods or improving the utilization of existing products. NPs are also important for both nations and companies. They not only bring tangible economic welfares to countries but also contribute to the formation of industrial clusters to safeguard existing competitive advantages for opening new sources of profit to companies. Under these circumstances, how to formulate effective marketing NPs strategies to ultimately persuade customers to accept and purchase the NPs. In the past, most researches have focused on limited factors to study the issues of successfully market NPs from the perspective of consumers. This research adopts a more comprehensive perspective and utilizes DANP method to collect data from the viewpoint of experts/scholars and senior managers in marketing-related departments within companies. The research results can be served as reference guidelines for the companies when they engage in marketing NPs.

This research firstly analyzes and consolidates thirteen criteria through reviewing past literature and categorizes them into four clusters. The DANP methodology combined with DEMATEL and ANP is adopted to revise the unrealistic assumption that each cluster in ANP has equal weight. In DEMATEL, this research evaluates the degrees of influences among clusters then are used to ANP to weight the clusters in ANP.

In the DEMATEL stage, the research results show that the External Environment Cluster has the highest net influence and the lowest total influence on the other clusters, it serves as the primary influence source of the clusters. This finding shows that the companies should screen the external environment, such as customer preferences, SWOT analysis, government financial subsidy, and infrastructure provided by government before formulate their NPs marketing strategies. In addition, seeing the Marketing Mix Cluster exerts the greatest total influence but the least net influence, it can be seen as the central role among the four clusters. This research result implies that the companies must set up an appropriate combination of product, price, promotion, and place (4Ps) on the basis of the characteristics of their NPs to create a reliable NPs marketing strategy. In the ANP stage, the senior managers selected Brand Proliferation Criterion, Customer Preferences Criterion, and Market Competition Criterion as the top three priority criteria, while Place Criterion, Market Segmentation Criterion, and Government Policy Criterion are the last three priority criteria, respectively. While the companies make their effort in marketing NPs, this research findings suggest that the companies may exploit the established brand image for reducing customers' uncertainty and increasing their trust on NPs to lift market share. The companies should also collect customer preferences exactly and swiftly for providing appropriate NPs to satisfy the needed customers, then foster customers' loyalty. The companies have to stick their eyes on market competition trends, identify their competitive advantages, formulate corresponding marketing strategies for NPs to boost current competitive position. On the other hand, the research results reflect the rationale of the last three priority criteria. In viewing of the rapid development of information technology, the potential customers can easily access or reach NPs through internet and e-commerce, place will no longer act as a remarkable factor to attract NPs except for some high price or extraordinary ones. On the market segmentation, if the companies have not well created clear position, taking hurried decision to launch NPs

may result in marketing failure. Additionally, current government policies seem to pay more attention on the NPD phase and neglect the needs of NPs marketing. Worse more, the government is insensitive on the trend of technology progress, the responsive lag will hinder the government to make proper policies to aid NPs marketing timely.

Since NPs may help to promote people's quality of life, enhance the companies' performance, and raise the nation's economic growth. However, those desirable objectives can only be realized after successfully selling NPs. The senior managers claimed that the government frequently reluctant to aid NPs marketing. This research suggests that the government should properly react the companies' request to formulate effective policies to support NPs marketing.

Reference

Atulkar, S., & Kesari, B. (2014). A review of customer preference towards organized retail stores. IRC's International Journal of Multidisciplinary Research in Social & Management Sciences, 2(3), 24-28.

Bainess, P., Fill, K., & Page, K (2010). Essentials of marketing, New Delhi: Oxford University Press.

Boh, W. F., Evaristo, R., & Ouderkirk, A. (2014). Balancing breadth and depth of expertise for innovation: A 3M story. Research Policy, 43(2), 349-366.

Bowersox, D. J., Stank, T. P., & Daugherty, P. J. (1999). Lean launch: Managing product introduction risk through response-based logistics. Journal of Product Innovation Management: An International Publication of the Product Development & Management Association, 16(6), 557-568.

Brata, B. H., Husani, S., & Ali, H. (2017). The influence of quality products, price, promotion, and location to product purchase decision on Nitchi at PT. Jaya Swarasa Agung in Central Jakarta. Saudi Journal of Business & Management Studies, 2(4), 357-374.

Cao, D., Li, Z., & Ramani, K. (2011). Ontology-based customer preference modeling for concept generation. Advanced Engineering Informatics, 25(2), 162-176.

Chen, J., Reilly, R. R., & Lynn, G. S. (2012). New product development speed: Too much of a good thing? Journal of Product Innovation Management, 29(2), 288-303.

Chen, M. J. (1996). Competitor analysis and interfirm rivalry: Toward a theoretical integration. Academy of Management Review, 21(1), 100-134.

Chen, R., Meng, Q., & Yu, J. J. (2023). Optimal government incentives to improve the new technology adoption: Subsidizing infrastructure investment or usage? Omega, 114, 102740.

Chen, S. H., & Lin, W. T. (2018). Analyzing determinants for promoting emerging technology through intermediaries by using a DANP-based MCDA framework. Technological Forecasting and Social Change, 131, 94-110.

Cooper, R. G., Edgett, S. J., & Kleinschmidt, E. J. (2004). Benchmarking best NPD practices-1. Research Technology Management, 47(1), 31.

Dalvi-Esfahani, M., Niknafs, A., Kuss, D. J., Nilashi, M., & Afrough, S. (2019). Social media addiction: Applying the DEMATEL approach. Telematics and Informatics, 43, 101250.

DeSarbo, W. S., Blanchard, S. J., & Atalay, A. S. (2017). A new spatial classification methodology for simultaneous segmentation, targeting, and positioning (STP analysis) for marketing research. Review of Marketing Research, 5, 75-103.

Drumond, P., Araújo Costa, I. P., Moreira, M. Â. L., Santos, M., Gomes, C. F. S., & Nascimento Maêda, S. M. (2022). Strategy study to prioritize marketing criteria: an approach in the light of the DEMATEL method. Procedia Computer Science, 199, 448-455.

Duboff, R., Potin, D., & Rodrigo, D. (2014). Positioning marketing: A new way for brands to communicate. Sound Screen World, 4.

Eraydin, A., & Armatli-Köroğlu, B. (2005). Innovation, networking and the new industrial clusters: The characteristics of

networks and local innovation capabilities in the Turkish industrial clusters. Entrepreneurship & Regional Development, 17(4), 237-266.

Fei, W., Zhang, Z., & Deng, Q. (2021). Universal pictures' SWOT analysis and 4Ps & 4Cs marketing strategies in the post-COVID-19 era. Proceedings of the 2021 International Conference on Public Relations & Social Sciences (ICPRSS 2021), 586(Icprss), 494–500.

Ganatra, V., Utama, A. A. G. S., Puran, P., Pandey, R., Qi, L. M., Kee, D. M. H., Ling, I. S. A., Sien, L. H., Tien,T. J., Ramadhan, H. S., Sin, L. G., & Pandey, M. A. (2021). A study of subway marketing 4P strategy. Asia Pacific Journal of Management & Education (APJME), 4(2), 47-64.

Gao, R. (2023). On the importance of pricing strategy in marketing strategy: A case study of lululemon. Frontiers in Business, Economics & Management, 10(1), 158-161.

Gürbüz, T., Albayrak, Y. E., & Alaybeyoğlu, E. (2014). Criteria weighting and 4P's planning in marketing using a fuzzy metric distance and AHP hybrid method. International Journal of Computational Intelligence Systems, 7(sup1), 94-104.

Hariyanto, E. (2018). The influence of brand experience through brand trust and brand satisfaction toward brand loyalty consumer at Carl's Jr Surabaya. Petra Business & Management Review, 4(2), 19-29.

Hauser, J., Tellis, G. J., & Griffin, A. (2006). Research on innovation: A review and agenda for marketing science. Marketing Science, 25(6), 687-717.

Heiens, R. A. (2000). Market orientation: Toward an integrated framework. Academy of Marketing Science Review, 1(1), 1-4.

Helmus, J. R., Spoelstra, J. C., Refa, N., Lees, M., & van den Hoed, R. (2018). Assessment of public charging infrastructure push and pull rollout strategies: The case of the Netherlands. Energy Policy, 121, 35-47.

Hooley, G., Greenley, G., Fahy, J., & Cadogan, J. (2001). Market-focused resources, competitive positioning and firm performance. Journal of Marketing Management, 17(5-6), 503-520.

Hoyer, W. D., & Brown, S. P. (1990). Effects of brand awareness on choice for a common, repeat-purchase product. Journal of Consumer Research, 17(2), 141-148.

Hultink, E. J., Griffin, A., Hart, S., & Robben, H. S. (1997). Industrial new product launch strategies and product development performance. Journal of Product Innovation Management, 14(4), 243-257.

Iskandar, J. (2015). Analisa Penerapan Segmeting, Targeting, dan Positioning terhadap Strategi Pemasaran. Journal of Universitas Tribhuwana Tunggadewi Malang.

Išoraitė, M. (2016). Marketing mix theoretical aspects. International Journal of Research-Granthaalayah, 4(6), 25-37.

Jerusalem, M. A. (2019). Model development for garment design assessing using DEMATEL. In IOP Conference Series: Materials Science and Engineering. 535(1), 12020.

Jin, J., McKELVEY, M., & Dong, Y. (2020). Role of local governments in fostering the development of an emerging industry: A market-oriented policy perspective. Frontiers of Engineering Management, 7(3), 447-458.

Kanagavalli, G., & Azeez, R. (2019). Logistics and e-logistics management: benefits and challenges. International Journal of Recent Technology & Engineering (IJRTE), 8(4), 12804-12809.

Kieliszek, M., Piwowarek, K., Kot, A. M., Błażejak, S., Chlebowska-Śmigiel, A., & Wolska, I. (2018). Pollen and bee bread as new health-oriented products: A review. Trends in Food Science & Technology, 71, 170-180.

Kotler, P. (1967), Marketing Management, 1st ed. Englewood Cliffs, New Jersey; Prentice-Hall.

Kotler, P., & Armstrong, G. M. (2010). Principles of marketing. Pearson Education India.

Kotler, P., & Armstrong, G. M. (2014). Principles of Marketing 15th ed. Upper Saddle River, NJ: Pearson Prentice Hall.

Kotler, P., & Keller, K. L. (2006). Marketing management 12th ed. Upper Saddle River, NJ: Pearson Prentice Hall.

Kotler, P., & Keller, K. L. (2012). Prentice Hall video library to accompany Marketing management. Pearson/Prentice Hall.

Kumar, A., & Anbanandam, R. (2020). Analyzing interrelationships and prioritising the factors influencing sustainable intermodal freight transport system: A grey-DANP approach. Journal of Cleaner Production, 252, 119769.

Lamore, P. R., Berkowitz, D., & Farrington, P. A. (2013). Proactive/responsive market orientation and marketing—research and development integration. Journal of Product Innovation Management, 30(4), 695-711.

Langerak, F., Hultink, E. J., & Robben, H. S. (2004). The impact of market orientation, product advantage, and launch proficiency on new product performance and organizational performance. Journal of Product Innovation Management, 21(2), 79-94.

Lin, C. H., Tung, C. M., & Huang, C. T. (2006). Elucidating the industrial cluster effect from a system dynamics perspective. Technovation, 26(4), 473-482.

Liu, J., Zhai, X., & Chen, L. (2019). Optimal pricing strategy under trade-in program in the presence of strategic consumers. Omega, 84, 1-17.

McDermott, C. M., & O'connor, G. C. (2002). Managing radical innovation: an overview of emergent strategy issues. Journal of Product Innovation Management: An International Publication of the Product Development & Management Association, 19(6), 424-438.

Medase, K., & Barasa, L. (2019). Absorptive capacity, marketing capabilities, and innovation commercialization in Nigeria. European Journal of Innovation Management, 22(5), 790-820.

Mentzer, J. T., & Williams, L. R. (2001). The role of logistics leverage in marketing strategy. Journal of Marketing Channels, 8(3/4), 29-48.

Moisejevas, R. (2017). Predatory pricing: A framework for analysis. Baltic Journal of Law & Politics, 10(1), 124-155.

Murniati, R. (2023). The characteristics of predatory pricing violations according to competition laws in Indonesia. 3rd Universitas Lampung International Conference on Social Sciences (ULICoSS 2022), 60-68, Atlantis Press.

Naletina, D., Damić, M., & Jabučar, A. (2019). Customer satisfaction with services of low-cost carriers at Pula and Zadar airports. InterEULawEast: Journal for the International & European Law, Economics & Market Integrations, 6(2), 71-97.

Oh, I. S., Kim, S., & Van Iddekinge, C. H. (2015). Taking it to another level: Do personality-based human capital resources matter to firm performance? Journal of Applied Psychology, 100(3), 935.

Ou Yang, Y. P., H. M. Shieh, J. D. Leu, and G. H. Tzeng, 2008, A novel hybrid MCDM model combined with DEMATEL and ANP with applications. International Journal of Operations Research, 5(3), 160-168.

Pearce, J. A., Robinson, R. B., & Subramanian, R. (2000). Strategic management: Formulation, implementation, and control. Columbus, OH: Irwin/McGraw-Hill.

Porter, M. E., & Strategy, C. (1980). Techniques for analyzing industries and competitors. New York: Free.

Schwartz, G., & Clements, B. (1999). Government subsidies. Journal of Economic Surveys, 13(2), 119-148.

Serradilla, J., Wardle, J., Blythe, P., & Gibbon, J. (2017). An evidence-based approach for investment in rapid-charging infrastructure. Energy Policy, 106, 514-524.

Shapiro, A. R. (2006). Measuring innovation: Beyond revenue from new products. Research Technology Management, 49(6), 42-51Singh, M. (2012). Marketing mix of 4P's for competitive advantage. Journal of Business and Management, 3(6), 40-45.

Sinurat, W., & Dirgantara, I. M. B. (2021). The effects of brand equity, price, and brand proliferation on new product performance through product trial: Evidence from FMCG industry in Indonesia. Diponegoro International Journal of Business, 4(1), 58-68.

Stremersch, S., & Tellis, G. J. (2004). Understanding and managing international growth of new products. International Journal of Research in Marketing, 21(4), 421-438.

Stryker, J. D. (1996). Launching a new business-to-business product, New York: Wiley.

Sudari, S., Tarofder, A., Khatibi, A., & Tham, J. (2019). Measuring the critical effect of marketing mix on customer loyalty through customer satisfaction in food and beverage products. Management Science Letters, 9(9), 1385-1396.

Tarantino D. P., (2003). Using the balanced scorecard as a performance management tool. Physician Executive, 29(5), 69-73.

Thomas, M. R., & George, G. (2021). Segmenting, targeting, and positioning (stp) of generational cohorts Y, Z and Alpha. IIMS Journal of Management Science, 12(2), 115-129.

Trihatmoko, R. A. (2020). Performance and success of new product strategies in market competition: Business buyer behavior and marketing mix series of fast moving consumer goods (FMCG). Quality Access to Success, 21(176), 51-55.

Utama, D. M., Maharani, B., & Amallynda, I. (2021). Integration Dematal and ANP for the supplier selection in the textile industry: A case study. Journal Ilima Teknik Industry, 20(1), 119-130.

Van Rijinsoever, F., Welle L., & Bakker S (2014). Credibility and legitimacy in policy-driven innovation networks: Resource dependencies and expectations in Dutch electric vehicle subsidies. Journal of Technology Transfer, 39(4), 635–661.

Yasa, N., Giantari, I. G. A. K., Setini, M., & Rahmayanti, P. J. M. S. L. (2020). The role of competitive advantage in mediating the effect of promotional strategy on marketing performance. Management Science Letters, 10(12), 2845-2848.

Zhang, W., & Deng, Y. (2019). Combining conflicting evidence using the DEMATEL method. Soft Computing, 23, 8207-8216.