從文化角度發展台灣國家品牌

Develop Taiwan's Nation Brand with a Cultural Perspective

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摘要：為謀求國家的競爭力，許多國家都越來越重視國家品牌的建立。創造良好的國家形象可從出口、文化、觀光、人民、政府和投資等六個構面進行。台灣應積極投入資源，來強化發展台灣的國家品牌。台灣具有多元的文化，所以很適合從文化的角度發展台灣的國家品牌。因此，本研究的目的主要是從文化的角度探討論找出適合發展為台灣國家品牌的文化活動。藉由決策實驗分析法來探討流行音樂、電影、電視劇、藝術品、劇場、出版、棒球及跆拳道等活動間的關係，再藉由最大平均熵差法來找出門檻值，以降低關係的複雜性。從研究結果發現，台灣可以思考從流行音樂、電影及電視劇等活動去建立台灣的國家品牌。
關鍵詞：文化；決策實驗分析法；最大平均熵差法；國家品牌

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Abstract: To seek national competitiveness, many countries have increasingly paid attention to building their nation brand, creating better country images in six major areas; export, culture, tourism, people, governance and investment. Taiwan should actively find out the activities that could facilitate the development of its nation brand, and put resources into strengthening them, in order to develop Taiwan's nation brand. With its diverse culture, Taiwan is quite suitable for developing the nation brand from the cultural perspective. Therefore, the purpose of this study is mainly to discuss the nation brand from the cultural perspective, and figure out the items that could represent Taiwan's national brand the most. The Decision Making Trial and Evaluation Laboratory (DEMATEL) is utilized to discuss nation brand by factoring in such items as pop music, movie, TV drama, artwork, theater, publishing, baseball and kickboxing. The DEMATEL approach is also used to explore the correlation between these items, while the Maximum Mean De-Entropy (MMDE) approach is used to determine the threshold, so as to lower the complexity of the problems. The study findings show that Taiwan should consider establishing nation brand from the factors of the pop music, movie and TV drama.

Keywords: Culture; DEMATEL; MMDE; Nation brand.

1. Introduction

Nation brand is a relatively new field, but studies on the effect of country image on product purchases have existed for decades (Papadopoulos and Heslop, 2002; Shimp, Samiee and Madden, 1993). Nation brand as a concept and practice has attracted national governments' attention and financial resources within established capitalist economies and emerging market economies. In the past few years, many countries with diverse political philosophies such as Poland, New Zealand, Botswana and Taiwan have caught the "brand wagon", engaging the profit-based marketing techniques of private enterprises to create and disseminate a particular version of national identity (Melissa, 2008).Therefore, all responsible governments need to determine the world's perception of their country, and to develop a strategy for managing their external perception (Anholt, 2007). Nation

brand has become increasingly important in recent years. Almost every government is using the concept to successfully face the pressures of global competition (Kotler and Gertner, 2002).

Taiwan is a developing country, so nation brand should enable the country to improve its global image to contend with other countries. Taiwan has been continuing to work on its nation brand to improve its image for several years now (Anholt and Hildreth, 2005). Cultural activity is an important means to improve the nation brand. With diverse and complex cultural background, Taiwan has formed various cultural characteristics. This study is going to explore the subject of Taiwan's nation brand from the cultural perspective. So this paper seeks to find the strategy of branding Taiwan from the perspective of culture and the interactions of culture criteria. According to analytic results, we provide a direction for Taiwan to think about developing its nation brand.

To develop Taiwan's nation brand is a kind of Multiple Criteria Decision-Making (MCDM) problem. Many traditional MCDM methods are based on the additive concept along with the independence assumption, but each individual criterion is not always completely independent (Wu, 2008). The decision Making Trial and Evaluation Laboratory (DEMATEL) can convert the relations between causes and effects of criteria into a visual structural model (Hori and Shimizu, 1999). The DEMATEL have these advantages and have been successfully applied in many fields (Tsai, Chou, and Lai, 2010; Tsai *et al.*, 2010; Tsai and Hsu 2010; Tsai *et al.*, 2010). This paper proposes an effective strategy for branding Taiwan based on a combined DEMATEL and MMDE approach.

In order to work effectively, the nation brand must include political, cultural, business and sporting activities (Jaffe and Nebenzahl, 2001). At the same time, it is critical to continuously develop culture in nation brand. Therefore this study seeks to explore the impact of cultural views on Taiwan's nation brand; in particular, it discusses the following: a) studying the cultural activities that could be possibly considered for developing Taiwan's nation brand. b) exploring the correlation between the study of various activities by using DEMATEL and MMDE approaches. c) finding out the cultural activities that are the most suitable to developing Taiwan's nation brand.

2. Literature Review

2.1 Nation Brand

Any nation can be viewed as a brand, because it can be viewed as a composite of contemporary and historical associations that have relevance for marketing. It is generally accepted that the notion of the nation as a brand has an instant and even populist resonance. A brand can moreover be expressed as an entire cultural history. The image of a country is so complex and fluid in order to deny the clarity implicit in a word such as brand image. Different parts of a nation's identity become the focus on the international stage at different times, affected by the current political events and even by the latest movie or news bulletins (O'Shaughenssy and O'Shaughenssy, 2000).

Nation brand image is reflected in personal feelings about a country what one knows and thinks about, and is developed by representative products, national characteristics, political and economic background, history and tradition. As Anholt (2005) put it, image and progress go hand in hand, as a positive image is the result of progress, rather than vice versa, and when both of them are carefully managed, they help each other and create quickened change. Nation brand can deeply shape a country's economic, cultural and political destiny, as well as international competitiveness (Nicolescu *et al.*, 2008).

The image that an individual has of another country shows how one thinks of that country as a tourist destination, as a place to invest or as a source of goods. Therefore, nation brand becomes part of a self-perpetuating cycle: as a country promotes its brands, those brands will contribute to the country (Nicolescu *et al.*, 2008).

Marketing literature on the image construct shows that the investigation of a nation's brand image should go beyond the analysis of isolated image factors to an integrated approach. The integrated approach should explore the factors that influence the formation of the image and the consequences of the image, including various forms of political behavior (Kemming and Sandikci, 2007).

Creating a national image consists of using strategic marketing to promote a

country's image, products, tourism as well as foreign direct investment. Creating a national image has been defined by Nworah (2004) as being the process through which a country is actively seeking to create a unique and competitive identity with the purpose of positioning the country both internally and externally as a high-quality location for trade, investment and tourism. Actually creating a national image has to consider more aspects as there are more audiences that are addressed in this process. The factors to be considered when creating national images are foreign direct investments, tourism, public diplomacy, exports, culture, sports and people. These factors play an important role in a country's international competitiveness as the key aspects which foreign customers come in contact with (Nicolescu *et al.*, 2008).

The implementation of nation branding strategies must be encouraged at all levels of the economy including not only organizations involved on an international level, but also the local population, because community self-perception is very important in building long-term, sustainable nation equity. During the process of rebuilding a country's image, nation brand is the key to the establishment and consolidation of a collective identity in a holistic way. The elements of places and people must unite to inspire a dynamic impact in the international marketplace (Nuttavuthisit, 2007).

To achieve the purpose of nation brand, the message which is being communicated, and also the target audience, must be determined before the launch of any campaign. Nation Brand is facing two diametrically opposed preconditions which must be satisfied to ensure successful communication of brand value: the brand must be special to enable the country to position itself against competitors whilst drawing upon the common associations shared by potential customers in order to use the process of the emergence of psychology (Fan, 2006; Roth, 1995).

In the global market, Nation Brand should ideally function as a national umbrella brand to distinguish a country's products in international competition (Fan, 2006; O'Shaughenssy and O'Shaughenssy, 2000). Any organization trying to use a country's nation brand must attempt to assess the quality of the existing state in order to enhance the positive perceptions of their country, and to filter out

or to divert attention from the negative aspects (Fan, 2006).

All responsible governments and regional authorities, on behalf of their people, their institutions and their companies, need to find what the world's view of their country is, and to develop a strategy to manage it. An important part of the government's job is to try to build a reputation that is fair, true, attractive, powerful, truly useful to their economic, political and social purposes, and honestly reflects the spirit, the genius and the will of the people. This enormous task has become one of the basic skills of national and regional administrations in the 21st century (Anholt, 2008) .

A nation brand provides no tangible product or service; instead, it represents and includes a wide variety of factors and associations (Fan, 2006):

- Place-geography, natural resources, tourist attractions
- People - race, ethnic groups
- History
- Culture
- Language
- Political and economic systems
- Social institutions
- Infrastructure
- Famous people (the face)
- Picture or image

2.2 Taiwan's Nation Brand

Taiwan does not have a strong country image or nation brand in the world, so the general objective of Taiwan's continuing campaign has been to transform an initially negative country image into a strong positive image, among several target audiences around the world. Taiwan's development of its country image in the world, first and foremost focus on the country's industrial prowess and competent producers, but has recently been emphasizing more on the beauty of the country. To maintain an adequate 'share of voice' is particularly important in seeking a diffuse target audience in the global community. Taiwan's government made a clear commitment to change its country image through advertising

campaigns from 1990 to the present, and the government has developed its own quality logo, 'Very well made in Taiwan', as well as a red symbol of excellence that has been featured continuously in advertisements from 1992 onwards (Amine and Chao, 2004).

2.3 Culture

Culture, the most intangible yet the most distinctive element of any population and country, plays a vital role in nation brand (Pant, 2005). Every country has a culture, a heritage, resources, natural scenery, and internal qualities that can be discriminated and defined, highlighted and captured. In a nation-branding initiative, culture is both pleasing and economically effective (Anholt, 2005; Melissa, 2008).

Within Anholt's Nation Brand Hexagon, culture would be one of the six dimensions through which people perceive a country, the other five being exports, people, tourism, governance and investment and immigration (Florek and Conejo, 2007). Culture is a measure of a country's heritage, its resonance with contemporary culture from music, films, art and literature, as well as the country's excellence in sports. Various cultural activities are presented to respondents to measure their powerful images of a country's cultural products (Anholt, 2009).

National culture and creativity is found in its values, cultural characteristics, as well as showing the lifestyle. In Taiwan, the long-term creative cultural industries have been adopted as part of the government's policies to boost the local cultural identity and the protection of local content. "Creative Taiwan - cultural and creative industries development program" is a good example of Taiwan's government efforts to develop and promote the local cultural identity. The program is slated to run from 2009 to 2013 (Taiwan Cultural Affairs, 2010).

Based on the above factors, it is clear that culture plays an important role in the nation brand and is a necessary factor in the development of nation brand. Therefore, in this study we will discuss nation brand from the cultural perspective in order to build Taiwan's nation brand.

2.4 Taiwan's Cultural Activities

2.4.1 Music

According to the music classification system, symphony, chamber music and opera are classified as fine art, while pop music and folk music belong to popular culture. The pop music penetrates into different cultures and social classes rapidly, becoming the foundation of entertainment industry (Vogel, 1998). It is a cultural commodity that has the least cultural and lingual gaps, so it has the most powerful global competitiveness. Due to the characteristics of low cultural gap, the pop music industry plays a critical role in the whole cultural and industrial system. Nowadays, with the global prevalence of Chinese learning, Taiwan's pop music is also an important part in the Chinese pop music.

2.4.2 Films

(1) Movies

The movie industry is one of the indicators for the cultural progress of a country. It also occupies the vital place in the creative cultural industries. This is because under the market concept of "Content is King", the movie industry doesn't only play the role of content, but also have the capability of combining related industries. The movie industry combines the elements of music, visual art and performing art horizontally. Regarding the vertical combination, movies could further develop into multi-media videos, TV content or publications. In this way, the movie industry constructs a giant hierarchical structure to develop the creative cultural industries. It seems to act as the leading role of the creative cultural industries.

For Taiwan's movies, the Taiwan New Wave emerged in 1980s with the popularity of its natives' literature and folks. However, after 1990s, Taiwan movies underwent poor performance in both production and box office. Furthermore, as a result of opening the market to foreign movies, as well as rising of the new media, the Taiwanese people started to examine Taiwan movies. As a result, the works of many directors have been highly evaluated in the international film festivals in recent years. It did not only infuse some vitality into Taiwan's movies, but also gained fame in the worldwide movie industry. It is a great

encouragement to Taiwan's creative cultural industries.

(2). TV Drama

TV Drama is considered as an art of popular culture. With the primary purpose to draw people's attention, it is mostly based on the normal life of the common people. In recent years, by referring to the experience obtained from the industries of drama, album and broking, Taiwan's idol drama offers a new possibility for the TV drama industry in Taiwan. TV drama symbolizes the culture, value and perception of a country. When many TV dramas are broadcast in the TV channels in other countries, it will surely convey the social, cultural and national image of Taiwan, and make the world know more about Taiwan. Moreover, it pushes the popular commodities into the market by commercializing the idol drama. In this way, it conveys the brand spirit to the customer unconsciously and also spreads the nation brand, "Taiwan".

2.4.3 Art and literature

(1) Artwork

Artwork is the creative object of artistic values and the fruits of talented artists. The orientation and achievements of artworks are generally considered as a specific cultural presentation of a country.

As for the artworks in Taiwan, the National Palace Museum is more than a representative of Taiwan's artworks, where a great variety of historic national treasures from China are collected. From the cultural perspective, the National Palace Museum doesn't only keep the history and cultural relics, but also recruits professional research scholars and experts, which made profound contributions to our understanding of cultural relics. The country's preservation and exhibition of its artworks is gradually being defined as an important media of the national and cultural traditions. Through public exhibition, the National Palace Museum could make Taiwan's art industry go outside Taiwan. It is the most specific presentation of Taiwan's culture and, more importantly, it promotes the nation brand, "Taiwan".

(2) Theatre

Theatrical Dance in Taiwan emerged in the 1950s, and has developed into a diverse and global state until now. The most representative theatres of Taiwan are

the Cloud Gate Dance Theatre and the Ming Hua Yuan Arts and Cultural Group, both with local theatrical characteristics. Founded in 1973, Cloud Gate Dance Theatre is Taiwan's first contemporary dance group. Later on, with the establishment of the National Theatre and various cultural centers, performing arts and activities were increasingly flourishing, and the foreign performing groups came to Taiwan for performance as well. As performing art increasingly globalized, Taiwan's theatrical technique grew consecutively as well. Taiwanese Opera is a kind of local and traditional theatre developed in Taiwan and based on the culture of South Min. Ming Hua Yuan Arts and Cultural Group, the most famous group, presents vivid and delicate stage performance and ethnic cultural spirits. The frequent performance tours aboard of Cloud Gate and Ming Hua Yuan have been highly evaluated by both Chinese and foreigners. By doing so, it doesn't only facilitate international communication, but also improve the national image and promote the national brand of Taiwan.

(3) Publishing

Taiwan's publishing industries started to flourish since 1949. Going through the lifting of martial law in 1987 and the era of advanced economy in Taiwan, publishing industries in the 21st century has entered a heated competition period. There are nearly 8,000 publishers in Taiwan; moreover, annual publishing has reached nearly 40,000 kinds. It has been more than 80 years since the New Taiwan Literature Movement started in 1920. Through the social, political, economic and humanistic dimensions reflected in the literature works of Taiwan, people all over the world could recognize the development and current situation of Taiwan and have a deeper impression of Taiwan. Moreover, with elegant words, Taiwan presents its literature strength to the whole world (Jhang, 2005).

2.4.4 National Excellence in Sports

When teams or individuals win sports games on behalf of a country, it improves the international image of said country.

(1) Baseball

It's been over a century since the baseball development in Taiwan in 1906. Taiwan's baseball teams had obtained outstanding performance and won world championships several times in the international baseball games during the period

of 1977 to 1991. It made Taiwan's baseball shining on world stage, and helped to gain an important place in the international baseball circle. When the Chinese Professional Baseball League was founded in 1990, Taiwan's baseball became professional. After 2002, many excellent baseball players of Taiwan challenge the Major League Baseball successively. Baseball forms a strong identity of the Taiwanese people to their nationality and ethnicity, and embarks on a mission to enter the world stage. Thus, baseball is very significant to Taiwan.

(2) Kickboxing

Kickboxing is a sport which requires fighting with fist and feet. It became the official game in Sydney Olympics held in 2000. After kickboxing was introduced to Taiwan in 1967, there were more than 2 million people exercising it till now (Chi and Chiu, 2004). Taiwan's kickboxing has gained a lot of reputations in the international sports worlds with fierce competition. It is also a guarantee for Taiwan to win medals in the Olympics, Asia Games and various international championship games. Moreover, Taiwan is graded as the first-level of kickboxing countries by the international sports media.

3. Methodology

This study firstly sorted out the literatures studying on nation brand and culture, and worked out the study framework based on 8 cultural activities with Taiwan's special characteristics, including pop music, film, TV drama, artwork, theatre, publishing, baseball and kickboxing. After that, it converted this framework into the matrix structured questionnaire of DEMATEL. According to Teng (2002), 5 to 15 experts will be appropriate for group decision making, so we conducted questionnaire survey onto 15 experts from the culture field. For the survey subjects, we mainly choose school professors or officers who are superior to the director of Department of Cultural Affairs. That's because the industries may consider their own industry as more important due to egoism, which may cause deviation. The questionnaire results are then conducted with correlation analysis by the DEMATEL approach, which could lower the complexity of the

problems. The MMDE approach is adopted to determine the threshold. The final results are taken to think about how to create a good nation brand for Taiwan.

3.1 Decision Making Trial and Evaluation Laboratory

The DEMATEL method was developed by the Battelle memorial association of the Geneva research center (Fontela and Gabus, 1976; Gabus and Fontela, 1973). Initially, DEMATEL was used to study the complex world problems regarding things like: race, hunger, energy, and environmental protection (Fontela and Gabus, 1976). In recent years, Japan, Taiwan, and Korea have widely applied DEMATEL to solve problems in different fields successfully (Hajime, Kenichi, and Hajime, 2005; Kim, 2006; Lin and Wu, 2008; Wu and Lee, 2007).

The DEMATEL method is based on graph theory, enabling researchers to plan and solve problems intuitively, so that the relevant factors can be divided into cause and effect groups in order to understand causal relationships. The method can confirm interdependence between the variables and aid the development of a directed graph to reflect the interrelationships between variables (Lia and Tzeng, 2009).

On the basis of the studies conducted by Lee, Yen, and Tsai (2008), Lee *et al*. (2008), and Lee *et al*. (2010), this study briefly describes the structure of DEMATEL and the calculation steps as follows:

Step 1: Defining the variables and creating the measurement scale

Assuming there are n variables that impact the complicated system, we can establish the measurement scale of the pair-wise comparison of causal relationships and the level between variables; the measure scales are divided into levels 0, 1, 2, 3, and 4, which respectively represent "no impact", "low impact", "medium impact" "high impact" and "great impact".

Step 2: Generating the direct-relation matrix

When the number of variable is n, pair-wise comparisons of the variables which are dependant on their influence relationships and level based on the data gathered are calculated, and then the direct-relation matrix, Z, of n × n can be determined. In the direct-relation matrix, Z, Z_{ij} represents the

variable, the level of i impact variable j, and the diagonal variable Z_{ii} of the direct-relation matrix, Z is set to 0.

$$Z = \begin{bmatrix} 0 & z_{12} & \cdots & z_{1n} \\ z_{21} & 0 & \cdots & z_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ z_{n1} & z_{n2} & \cdots & 0 \end{bmatrix}$$

Step 3: Normalizing the direct-relation matrix

The method of normalized direct-relation matrixes uses the biggest sum of the column/row vector as the normalized base Set (Gulcin and Demet, 2010; Lia and Tzeng, 2009; Tsai *et al.*, 2010; Tzeng *et al.*, 2007).

$$\lambda = \min\left(\frac{1}{\max\limits_{1 \le i \le n} \sum\limits_{j=1}^{n} z_{ij}}, \frac{1}{\max\limits_{1 \le j \le n} \sum\limits_{i=1}^{n} z_{ij}} \right)$$

$$X = \lambda \times Z$$

From the calculation above, multiply the direct-relation matrix, Z, by λ to receive normalized direct-relation matrix, X

Step 4: Obtaining the direct/indirect-relation matrix

According to the following calculation, the direct/indirect-relation matrix, T, or total-relation matrix can be obtained.

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

Where 「I」 is an identity matrix.

Assume t_{ij} as the quality feature of the direct/indirect-relation matrix, T, and i; j = 1; 2; ... ; n. According to the following equation, the total of row and column in direct/indirect relation matrix can be reached, and assume D_i

as the sum of row i, which represents the variable I; the cause that affects the sum of other variables; R_j is the sum of column j, which represents the variable, i is the result and the sum affected by other variables.

$$D_i = \sum_{j=1}^{n} t_{ij}, (i = 1,2,\cdots,n) \; ; \; R_j = \sum_{i=1}^{n} t_{ij}, (j = 1,2,\cdots,n)$$

Step 5: Drawing out the causal diagram

The causal diagram takes (D+R) as the horizontal-axis, and (D-R) as the vertical-axis, and combines 2-D graphics to create the symbol matrix, S, and uses the diagram to express the purpose of resorting the diagram to simplify the complicated casual relationship into easily understandable visual structure.

3.2 Maximum Mean De-Entropy Algorithm (MMDE)

In the DEMATEL model, an appropriate threshold value is necessary to obtain a suitable impact-relations map and adequate information for further analysis or decision-making. Following the traditional method, we set a threshold value by conducting discussions with experts. The researcher set up an appropriate threshold value and then outlines the impact-relations map to assess whether the impact-relations map is suitable for the structure of the problem. If not, the threshold value is substituted with another value, and another impact-relations map is redrawn until a consensus is achieved amongst the researchers. It is difficult to choose a consistent threshold value, especially if there are too many experts contributing an opinion to the same study. When the problem has many factors, the work involved to achieve the same threshold value becomes more complex (Lia and Tzeng, 2009).

Compared with traditional methods, which confront the loop from a "set a threshold value" to obtain "the needed impact-relations map", we propose the maximum mean de-entropy (MMDE) algorithm to obtain a threshold value for outlining the impact-relations map. MMDE approach mainly uses the concept of entropy. Entropy is a thermodynamics approach used in the physics measurement,

and this concept is quite important in the social science (Zeleny, 1981). Initially, it was applied in the information theory, which was taken as the expected value of the information amount. It could also be used to measure the uncertainty of the discrete probability distribution. This algorithm is based on the entropy approach method which can be used to derive a set of dispatch-nodes, the factors which strongly dispatch affect the others, and a set of receive-nodes, which are easily affected by other factors. According to these two groups, a unique threshold value can be obtained for the impact-relations map (Lia and Tzeng, 2009). At present, there are some studies that apply this approach to determine the threshold of DEMATEL, which is proven to get good results (Chen, Lee and Wu, 2012).

A description of the MMDE which is based on the study of Lia and Tzeng (2009) and uses the following calculation steps is as follows:

Definition 1: Set a random variable with n elements be denoted as X $=\{x_1, x_2, \ldots, x_n\}$, with a corresponding probability $P = \{p_1, p_2, \ldots, p_n\}$, then define the entropy, H, of X as follows:

$$H(p_1, p_2, \cdots, p_n) = -\sum p_i \lg p_i \; ; \; \sum_{i=1}^{n} p_i = 1; \; p_i \lg p_i = 0 \; \text{if} \; p_i = 0$$

By definition 1, the value of H $(p_1, p_2, \ldots, p_n)$ is the largest when $p_1 = p_2 = \ldots = p_n$ and we denote as

$$H\left(\frac{1}{n}, \frac{1}{n}, \cdots, \frac{1}{n}\right).$$

Definition 2: For a given finite discrete set of X, the de-entropy of X is denoted as H^D and defined as:

$$H_n^{D} = H\left(\frac{1}{n}, \frac{1}{n}, \cdots, \frac{1}{n}\right) - H(p_1, p_2, \cdots, p_n)$$

Definition 3: The (i, j) element of the matrix T is denoted as t_{ij} and directly affects the relationship from factor x_i to x_j. For each t_{ij}, the factor x_i is defined as a dispatch-node and x_j is defined as a receive-node with respect to t_{ij}..

Notation : In the MMDE method, C(X) denotes the cardinal number of an

ordered set X and N(X) denotes the cardinal number of different elements in set X. For example, if X = {1, 2, 3, 3, 1, 2}, C(X) = 6 and N(X) = 3.

Based on the total-relation matrix T, the steps of the proposed maximum mean de-entropy algorithm for deciding a threshold value are briefly described as follows:

Step 1: Transforming the n × n total relation matrix T into an ordered set T, {t_{11}, t_{12}, ... , t_{21}, t_{22}, ... , t_{nn}}, rearranging the elements in set T from large to small, and transforming to a corresponding ordered triplets (t_{ij}, x_i, x_j) set denotes T*. Every element of set T, t_{ij}, can also be seen as an ordered triplet (t_{ij}, x_i, x_j) as (influence value, dispatch-node, receive-node).

Step 2: Taking the second element as the dispatch-node from the ordered triplets of the set T*, and then obtaining a new ordered dispatch-node set, T^{Di}.

Step 3: Taking the first t elements of T^{Di} as a new set T_t^{Di}, assigning the probability of different elements, and then calculating the H^D of the set T_t^{Di}, H_t^{Di}. The mean de-entropy can be determined using

$$MDE_t^{Di} = \frac{H_t^{Di}}{N\left(T_t^{Di}\right)}.$$

Step 4: For C(T^{Di}) mean de-entropy values, choosing the maximum mean de-entropy and its corresponding T_t^{Di}. This dispatch-node set, with the maximum mean de-entropy, is denoted as T_{max}^{Di}.

Step 5: Similar to Steps 2–4, an ordered receive-node set T^{Re} and a maximum mean de-entropy receive-node set T^{Re} maximum can be calculated.

Step 6: Taking the first u elements in T* as the subset, T^{Th}, which includes all elements of T^{Di} maximum in the dispatch-node and T^{Re} maximum in the receive-node, the minimum influence value in T^{Th} is the threshold.

4. Results

4.1 Analysis of Data

According to the input of 15 professionals assigned to a certain range, use the mean and establish a direct-relation matrix, X.

$$
X = \begin{bmatrix}
0 & 0.2095 & 0.2095 & 0.0830 & 0.1700 & 0.1462 & 0.0553 & 0.0435 \\
0.2055 & 0 & 0.2016 & 0.1225 & 0.1897 & 0.1581 & 0.0553 & 0.0474 \\
0.2134 & 0.1858 & 0 & 0.1225 & 0.1621 & 0.1502 & 0.0711 & 0.0553 \\
0.0870 & 0.1265 & 0.1067 & 0 & 0.1225 & 0.1462 & 0.0395 & 0.0356 \\
0.1621 & 0.1739 & 0.1660 & 0.1304 & 0 & 0.1304 & 0.0435 & 0.0356 \\
0.1542 & 0.1739 & 0.1660 & 0.1502 & 0.1383 & 0 & 0.0672 & 0.0711 \\
0.0553 & 0.0632 & 0.0711 & 0.0395 & 0.0474 & 0.0514 & 0 & 0.0988 \\
0.0435 & 0.0672 & 0.0711 & 0.0356 & 0.0474 & 0.0632 & 0.0909 & 0
\end{bmatrix}
$$

After standardizing the direct-relation matrix, the total-relation matrix, T is calculated.

$$
T = \begin{bmatrix}
0.7442 & 0.9493 & 0.9440 & 0.6313 & 0.8481 & 0.7884 & 0.3599 & 0.3174 \\
0.9488 & 0.8131 & 0.9745 & 0.6884 & 0.8959 & 0.8296 & 0.3744 & 0.3336 \\
0.9304 & 0.9451 & 0.7825 & 0.6701 & 0.8532 & 0.8030 & 0.3784 & 0.3326 \\
0.6223 & 0.6779 & 0.6578 & 0.4073 & 0.6220 & 0.6125 & 0.2642 & 0.2375 \\
0.8220 & 0.8615 & 0.8499 & 0.6247 & 0.6468 & 0.7251 & 0.3248 & 0.2881 \\
0.8452 & 0.8930 & 0.8812 & 0.6634 & 0.7965 & 0.6375 & 0.3599 & 0.3319 \\
0.3647 & 0.3862 & 0.3906 & 0.2720 & 0.3414 & 0.3293 & 0.1365 & 0.2133 \\
0.3535 & 0.3869 & 0.3883 & 0.2678 & 0.3394 & 0.3368 & 0.2186 & 0.1224
\end{bmatrix}
$$

4.2 Threshold value

Following the steps in Section 3.2, the results were calculated and are shown below:

Step 1: After transforming the total relation matrix T, shown above, the ordered triplets set T* was obtained as {(0.9745,2,3), (0.9493,1,2), (0.9488,2,1), (0.9451,3,2), ... ,(0.1224,8,8)}.

Step 2: According to the results of Step 1, the ordered dispatch-node set T^{Di} can be depicted as {2,1,2,3,1,3,2,6,6,...,7,7,8}.

Step 3: Based on the set T^{Di}, a collection of sets T_t^{Di}, in which t is from 1 to 64, can be obtained. After calculating all of the H^D values of the sets T_t^{Di}, a set with 64 mean de-entropy values is computed as follows {0,0,0.0283,0.0196,0.0146,...,0.0001,0}.

Step 4: From Step 3, the maximum mean de-entropy value is 0.0283 and the corresponding dispatch-node set is T_{max}^{Di}={2,1,2}={1,2}.

Step 5: Similar to Steps 2–4, the ordered receive-node set T^{Re}={3,2,1,2,3,1,5,...,7,8}, the de-entropy value set of T_t^{Re}, a set with 64 mean de-entropy values is calculated as follows {0,0,0,0.0196,0.0146,0,0.0086,0.0164,0.0189,0.0266,0.011,...,0.0001,0} and corresponding receive-node set T_{max}^{Re}={3,2,1,2,3,1,5,2,3,2}={1,2,3,5}.

Step 6: According to the results of Steps 4 and 5, the elements {1,2} are the dispatch-nodes and the elements {1,2,3,5} are the receive-nodes in the impact-relations map. Based on these two constraints, the required subset, T^{Th}, of the ordered set T* is{(0.9745,2,3), (0.9493,1,2), (0.9488,2,1), (0.9451,3,2), (0.9440,1,3), (0.9304,3,1), (0.8959,2,5)}. In the above set T^{Th}, the nodes in the shaded box are the required dispatch-nodes shown the first time in the ordered set T^{Th}, the nodes in the non-shaded box are the required receive-nodes shown the first time in the ordered set T^{Th}, and the minimum influence value in T^{Th} is the threshold value, p= 0.8959.

Table 1
The Total-Relation Matrix for All Variables

	Pop music	Movie	TV drama	Artwork	Theater	Publishing	Baseball	Kickboxing
Pop music	0.7442	**0.9493**	**0.9440**	0.6313	0.8481	0.7884	0.3599	0.3174
Movie	**0.9488**	0.8131	**0.9745**	0.6884	**0.8959**	0.8296	0.3744	0.3336
TV drama	**0.9304**	**0.9451**	0.7825	0.6701	0.8532	0.8030	0.3784	0.3326
Artwork	0.6223	0.6779	0.6578	0.4073	0.6220	0.6125	0.2642	0.2375
Theater	0.8220	0.8615	0.8499	0.6247	0.6468	0.7251	0.3248	0.2881
Publishing	0.8452	0.8930	0.8812	0.6634	0.7965	0.6375	0.3599	0.3319
Baseball	0.3647	0.3862	0.3906	0.2720	0.3414	0.3293	0.1365	0.2133
Kickboxing	0.3535	0.3869	0.3883	0.2678	0.3394	0.3368	0.2186	0.1224

Note: Bold Values Means $\geq$ The Threshold Value (0.8959).

Table 2
**Causal Influence Level Summarized Table of Criteria**

Criteria	D	R	D+R	D-R
Pop music	5.5826	5.6311	11.2137	-0.0485
Movie	5.8583	5.9130	11.7713	-0.0547
TV drama	5.6953	5.8688	11.5641	-0.1735
Artwork	4.1015	4.2250	8.3265	-0.1235
Theater	5.1429	5.3433	10.4862	-0.2004
Publishing	5.4086	5.0622	10.4708	0.3464
Baseball	2.4340	2.4167	4.8507	0.0173
Kickboxing	2.4137	2.1768	4.5905	0.2369

4.3 The prominence and relevance

Based on the DEMATEL steps and MMDE steps shown above, the results and the impact-relations were derived by mapping the dataset of (D+R, D-R). These are shown in Table 1 and Table 2. The impact-relations maps of the DEMATEL method are presented in Figure 1.

According to the values of (D+R) and (D-R) in Table 2, we created a criteria XY scatter with the coordinates of each criterion, based on the horizontal axis (D+R) and the vertical axis (D-R), shown as in Figure 1.

Figure 1

The Impact-Relations Map of Total-Relation – For All Variables
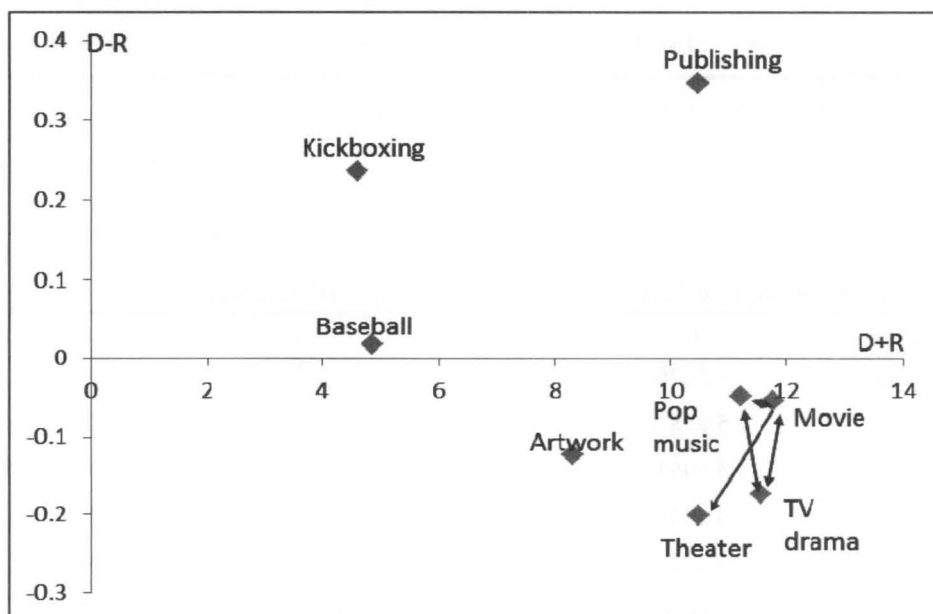
4.4 Discussion

This study first selected 8 cultural activities from the literature, which were suitable to developing Taiwan's nation brand, including pop music, film, TV drama, artwork, theatre, publishing, baseball and kickboxing. All these cultural activities are mature in Taiwan as for now, so they could represent Taiwan, and

ultimately develop into Taiwan's nation brand. However, it is not easy to develop a nation brand, which usually takes years before reaching some achievement. Moreover, it couldn't be accomplished by an enterprise or a governmental institution independently. Thus, this study worked out the correlation between these activities by using the DEMATEL approach. In this way, we found out the activities that could facilitate the development of Taiwan's nation brand the most, and are able to develop Taiwan's nation brand more efficiently.

By using the DEMATEL approach, we draw the impact-relations map based on D+R, D-R and values higher than the threshold. The decision-maker could review them to work out appropriate strategies. The results of this study show the activities with higher D+R are movie, TV drama, pop music, theater and publishing.

Table 2 shows the impact-relations between these activities. For example, there are 8 items in this study, so we get 8x8=64 relation values, which might be too complicated to the decision-maker. Therefore, we set a threshold, and screen the values higher than that threshold, so as to lower the complexity of the problems. However, if the threshold is too low, the relations will be still too complicated for the decision-maker. If it is too high, it might ignore some relations and get inaccurate results. In the past, most decision-makers set the threshold without using any approach. However, the MMDE approach could get an objective and specific value by using the concept of entropy, so this study used this approach to get good results. The relation chart between the values higher than the threshold is drawn with arrows, as shown in Figure 1, among which movie, TV drama and pop music show mutual impact, and movie impacts theatre.

The creation of pop music will promote the trend, while the production of movies and TV dramas will need a lot of music. Therefore, music impacts the development of movies and TV dramas. Accordingly, the development of movies and TV drama also impacts music creation, and the background music or the theme song needed by the movies is also related to music creation. Therefore, movie, TV drama and music impact and complement each other. The relation chart also shows that movie impacts theatre, because theatre could be said as a short movie, and the plots, properties, visual and sound-light effect will also

advance with the pace of movie development. In this way, movie impacts theatre.

Regarding publishing and artwork, book is less popular than movies among people, which is possibly because book reading is not as prevalent as movie appreciation in Taiwan. Moreover, art and literature are considered as impractical fields, and we don't have a good artistic environment. As a result, people working in these two fields can't make full use of their potentials. Therefore, we are relatively weak in the aforementioned fields.

Furthermore, sports activities of baseball and kickboxing obtain lower D+R value, and are the least correlated with other activities. It might be caused by our national situation, namely, sports development is not valued by the government and people. This phenomenon is also reflected in our education. People prefer to spend large amounts of money and time in study instead of physical exercise for the children. As a result, sports activities can't gain appropriate development.

Summarizing the above study results, Taiwan is suggested to make development strategies of its nation brand based on the activities of movie, TV drama and pop music. Pop music is the cultural commodity that has the least cultural gap and is easiest to spread. Therefore, when building nation brand from a cultural perspective, it is the easiest and most efficient way. Besides, movie is also a critical item for building the nation brand, which is one of the indicators for the cultural development of one country. It plays the leading role in the cultural industry, guiding the cultural development of a country. Therefore, when building the nation brand from a cultural perspective, it should be paid much attention. TV drama symbolizes the culture of a country. When a lot of TV dramas are broadcast in the TV channels of other countries, it will surely spread the nation brand, making the world know more about it. Therefore, when building the nation brand from a cultural perspective, it should be paid much attention and emphasized as well.

5. Conclusion

In order to seek development as a whole and international competitiveness of Taiwan, it is extremely important to create a good nation brand. This study

started from the cultural perspective, selected 8 cultural activities from the literatures that are suitable to develop Taiwan's nation brand; pop music, film, TV drama, artwork, theatre, publishing, baseball and kickboxing. Through the DEMATEL and the MMDE approaches, it found out that pop music, movie and TV drama showed mutual impacts, and that movie impacted theatre. According to this study, when promoting and establishing the nation brand form the cultural perspective, Taiwan could start from the activities of pop music, movie and TV drama, which will obtain high-efficient achievements.

The study results show the movie factor is one of the important cultural activities to build Taiwan's nation brand. However, the Taiwanese government hasn't paid much attention to the movie industry, which is reflected by the hardware environment, resources as well as subsidies. Movie is the leading role of creative cultural industries, which is definitely a primary consideration if Taiwan wants to build its nation brand from the cultural perspective. In addition, pop music is another important factor. The cultural policy decision-makers in Taiwan should also promote this factor to make the pop music of Taiwan flourish more. Music has no national boundary and cultural gaps, so it could promote Taiwan's nation brand and spread to the entire world. Moreover, as TV drama has been getting more prevalent in recent years, we could easily know the value, culture and perception of a country. If our country could work on this, it will surely increase international awareness of Taiwan. Therefore, cultural policy decision-makers in Taiwan should actively promote all these activities to facilitate the whole cultural development, with the expectation to improve Taiwan's nation brand. Finally, the study also found out the weakness of the sports factor. It is often ignored by the Taiwanese society, so a lot of sport elites went abroad, and we lose some opportunities to build Taiwan's nation brand, which is quite a pity. Thus, our government should think about it and pay more attention to it.

Currently, there are only a few studies on building Taiwan's nation brand. This study just conducts a preliminary discussion from the cultural perspective, and obtains the study results by using DEMATEL and MMDE appropriately. However, it may require long-term implementation and attention to build the nation brand. The concept of nation brand also includes the dimensions of

sightseeing, exports, investment, people and governance. Thus, follow-up studies should explore from these perspectives, and think about the significance of brand development, so as to make studies on Taiwan's nation brand more complete.

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