



Applying A Multi-Criteria Decision Making (MCDM) Approach to Determine the Key Criteria for Taipei Creative City of Design (TCCD) As A Business Centre in Taiwan

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ABSTRACT:

The aim of this research is to find out the key criteria for Taipei Creative City of Design (TCCD) as a business center in Taiwan according to the experts in terms of creative city of design. The methodology of this study consists of searching for the creative city of design indicators, which worked as alternatives for applying a multi-criteria decision making (MCDM), called the Analytic Hierarchy Process (AHP). Based on criteria derived from the literature, data collection and analysis that has been done, the researcher found that the human-oriented, design week/month, and city development are relatively high and should be given priority at the current stage. These results could provide a theoretical foundation for designing further the Taipei Creative City of Design.

Keywords: Taipei City, Creative City of Design, MCDM, AHP, Business Centre

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INTRODUCTION

Taipei City is the largest city in Taiwan, according to the World Population Review 2020, the population number of Taipei City is about 7,871,900 inhabitants (World Population Review, 2021), this city also as the capital of Republic of China (Taiwan) is a major high-tech industrial center. As the biggest city in Taiwan, Taipei City is also very good at promoting creativity as a good potential to be developed (PHILIP LIU, 2016). Creative activities in Taipei City can be seen from several activities carried out in this area and not only that, but in Taipei City there are many creative center, such as Huashan 1914 Creative Park, this creative park is one of the largest creative parks in Taiwan. It's located in Zhongzheng District in Taipei City, and boasts multiple exhibit spaces, shops, and cafes within the park grounds. Songshan Cultural and Creative Park also one of the best creative centers in Taipei City, in this park there is a big furniture design exhibit at the park's main space, as well as an outdoor bazaar offering products created by local designers.

Creativity activities in Taipei not only provided in park or some building center but also can be seen from university, there are so many design university located in this area such as National Taiwan University of Science and Technology, National Taipei University of Technology, National Taiwan Normal University and so many more. Many cities in developed and developing nations are currently embracing and modifying the creative city concept as a feasible urban regeneration approach, to varying degrees and magnitudes (Khoo, 2020). Creativity was one of the concern of UNESCO. UNESCO has established a program that called Creative Cities Network (CCN) that aims of this program are to foster international cooperation with and between cities committed to investing in creativity as a driver for sustainable urban development cultural vibrancy and social inclusion (UNESCO, 2020). Creative cities established by UNESCO have several fields that can be implemented for cities such as design,

film, crafts & folk art, gastronomy, literature, media arts, and music(UNESCO, 2019).

In respond to the network that has been created by UNESCO, we purpose the AHP method to find out the potential criteria of Taipei City. The AHP method is a method that is quite well known for finding a solution to a problem based on multiple criteria(Salvia et al., 2019). This method uses pairwise comparisons to get conclusions in a group decision that requires only one round. In comparison to the Delphi approach, the AHP method takes less time to complete the evaluation(Zhu et al., 2021). In AHP, the top-level of the hierarchy contains the aim of the decision problem, with successive levels comprising criteria and sub-criteria, and the alternatives at the bottom level of the hierarchy(Lin & Kou, 2021).

LITERATURE REVIEW

2.1 The Creative City

The root of the creative city idea lies in thinking about why certain cities over the past two decades seem to have adjusted to, even surfing the wave of change(Landry, 2012). Charles Landry (2008) stated, the philosophy of the creative city is focused on the belief that culture as values, knowledge, a way of life, and a type of creative expression, represents the soil from within which creativity emerges and develops, and thus gives momentum to the growth. The concept of the Creative City dates back to the 1990s(O'Connor et al., 2020). The main ideology of the creative cities concept is to improve the urban environment and create an inspiring city atmosphere(Landry, 2012).

2.2 UNESCO Creative Cities Network (UCCN)

The UNESCO Creative Cities Network (UCCN) was established in 2004, the network aims to foster collaboration with and among cities that have identified creativity as a key aspect for long-term urban development(UNESCO, 2017). By joining the Network, cities are commit to sharing their best practices

and developing partnerships involving the public and private sectors as well as civil society in order to:

1. Enhance the invention, production, distribution, and diffusion of cultural goods and services.
2. Create creative and innovative centers, as well as expand chances for cultural creators and experts.
3. Expand cultural involvement and access, especially for marginalized or vulnerable groups and individuals.
4. Fully integrate culture and creativity into sustainable development plans.

The Creative Cities program, launched by UNESCO, is a top-down territorial marketing technique. It is considered as a top-down approach in the sense that to get this designation a structured path, criteria, and procedures are defined at the UCCN level to be followed in each City and adapted by them with variable contents(Forleo & Benedetto, 2020).

2.3 Creative City of Design in Asia and the Pacific region

The creative city of design is a city that has similar characteristics such as an established design industry, a cultural landscape maintained by design and the built environment (public spaces, architecture, monuments, urban planning, and transportation), design schools and design research center, and practicing groups of designers with ongoing activity at the local and national level. The United Nations Educational Scientific and Cultural Organization has designated many cities in the Asia Pacific region as innovative cities of design, such as Beijing, Singapore, Geelong, Istanbul, Nagoya, Seoul, and many more(Cities of Design Network, 2020).

METHODOLOGY

Methodology plays a very significant role in the research(Reed et al., 2021). Data collection is part of the research design, there are several data collection methods, which are questionnaires, observation, and literature study. Thus, for data collection of this research, a questionnaire tool was used as a primary data.

The data were collected and analyzed by using the Analytic Hierarchy Process (AHP). The Analytical Hierarchy Process (AHP) is a method of making decisions on the problem of determining the priority choice of various alternatives (Saaty, 1977). The research procedure consisted of 2 steps.

1. The collection and classification of creative cities of design characteristics used in this study are indicators that have become standard by UNESCO.
2. Analyzing by the Analytical Hierarchy Process (AHP) method to get the characteristics of a creative city of design. There are four steps in conducting AHP analysis, the first is establishing a hierarchical model, establishing judgment matrices, hierarchical assessment, and the last is measuring the consistency of the AHP matrix (Salvia et al., 2019).

ANALYSIS AND RESULTS

4.1 Identification of Creative City of Design Characteristics

In this step, the researcher made a literature study to get a basic decision, parameter, or alternative that determines a city as a creative city of design. Indicators serve as the first factor in assessing whether a city is a creative city or not, and they are one of the most essential components in constructing the concept of a creative city. According to the UNESCO Creative City Network (UCCN), creative cities can be classified into seven categories, such as design, film, crafts & folk art, gastronomy, literature, media arts, and music. The researcher concentrated his investigation on the creative city of design. The UNESCO-recognized creative city of design criteria are highly different; there are 15 criteria or indicators that a city can choose from based on the peculiarities of the city.



Fig 1. Creative cities of design indicators

Explanation:

1. Professional Exchange: Committing to foster the exchange of professional designers by, for example, providing an in-residence program.
2. Student Exchange: The city supports exchanges and work placements from high schools as well as universities.
3. Human Oriented: Considering the social factor of design as a key issue of a city.
4. Design Week/Month: The city hosts a fair, in which companies from the design industry showcase their latest products and services.
5. Design Trade Fair: A trade fair is a short-term exhibition in which companies from the design industry showcase their latest products and services, meet with

industry partners as well as customers and examine recent market trends and prospective opportunities.

6. Business Oriented: Supporting the local (creative) industries in particular.
7. Show & Showcase: An exhibition format/space, in which design products are shown throughout the year.
8. Conferences on Design: The city hosts international conferences about design-relevant topics.
9. International Workshops: International workshops are held in the city; creative people (UCCN) are invited to actively participate.
10. Exhibition Space: There is an exhibition space available to show design products by local designers as well as international ones; UCCN-partner cities are invited to use and book the space.
11. Competitions & Calls: the respective city to announce an international call for papers, products, and designers.
12. City Development: Design is understood as a driver for city development.
13. Design Centre: There is a permanent design center in the city, where design is shown all year round.
14. Design University: There is at least one university in the city that offers degree programs in design.
15. Fashion Week: A fashion industry event takes place in the city for one week; international designers and brands display their latest products.

4.2 Analytic Hierarchy Process (AHP)

The purpose of this part is to develop applicable criteria for the creative city of design indicators. It mainly contains four steps:

- Developing a hierarchy of goal, criteria, sub-criteria and alternative
- Developing the AHP hierarchical structure for the assessment criteria
- Determination of the weight of indicators by AHP
- Measuring Consistency of the AHP matrix

4.2.1 Developing a hierarchy of goal, criteria, sub-criteria and alternative

A comprehensive evaluation of creative city assessment methods and relevant literature was done to find the creative city of design indicators. There are 15 indicators identified, which are divided into three categories: social, economic, and design and development.

Based on the review, the social aspect includes professional exchange, student exchange, human-oriented, conferences on design, international workshops, and exhibition space. While for the economic aspect includes design week/month, design trade fair, business-oriented, show & showcase, and fashion week. The last aspects are design and development includes competitions & calls, city development, design center, and design university. Following the identification of the indicators, we establish a hierarchy of goals based on these indications. The table and picture below show the indicators and hierarchy.

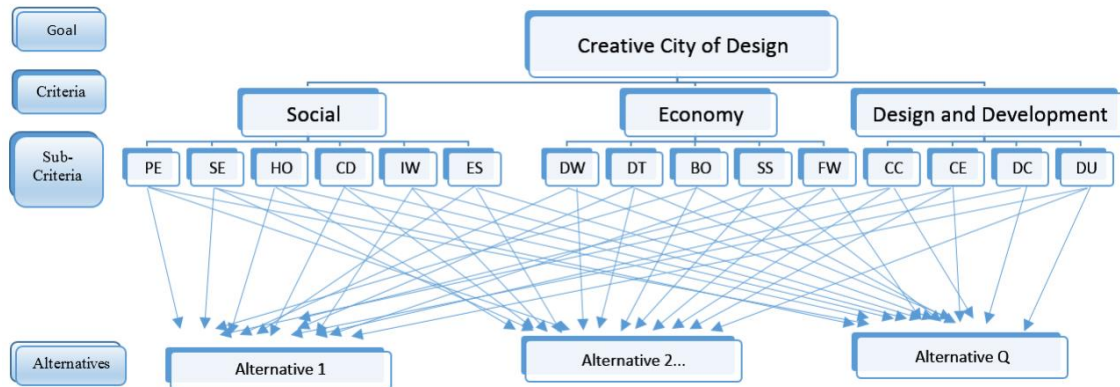


Fig 2. AHP hierarchy

4.2.2 Developing the AHP hierarchical structure for the assessment criteria

In this step, the researcher created an online questionnaire to gather feedback from experts. The AHP questionnaire was distributed by Line Messenger and email. The sampling method used was a non-random sampling technique (deliberately chosen), namely purposive sampling. Below is a hierarchical structure assessment that will be filled in by experts in choosing the most potential indicators in the development of creative city designs.

Table 1. List of the hierarchical structure for the assessment criteria

Criteria A	Numerical scale	Criteria B
Social	1 2 3 4 5 6 7 8 9	Economic
Social	1 2 3 4 5 6 7 8 9	Design and Development
Economic	1 2 3 4 5 6 7 8 9	Design and Development
Professional Exchange	1 2 3 4 5 6 7 8 9	Student Exchange
Professional Exchange	1 2 3 4 5 6 7 8 9	Human Oriented
Professional Exchange	1 2 3 4 5 6 7 8 9	Conferences on Design
Professional Exchange	1 2 3 4 5 6 7 8 9	International Workshop
Professional Exchange	1 2 3 4 5 6 7 8 9	Exhibition Space
Student Exchange	1 2 3 4 5 6 7 8 9	Human Oriented
Student Exchange	1 2 3 4 5 6 7 8 9	Conferences on Design
Student Exchange	1 2 3 4 5 6 7 8 9	International Workshop
Student Exchange	1 2 3 4 5 6 7 8 9	Exhibition Space
Human Oriented	1 2 3 4 5 6 7 8 9	Conferences on Design
Human Oriented	1 2 3 4 5 6 7 8 9	International Workshop
Human Oriented	1 2 3 4 5 6 7 8 9	Exhibition Space
Conferences on Design	1 2 3 4 5 6 7 8 9	International Workshop
Conferences on Design	1 2 3 4 5 6 7 8 9	Exhibition Space
International Workshop	1 2 3 4 5 6 7 8 9	Exhibition Space
Design Week/Month	1 2 3 4 5 6 7 8 9	Design Trade Fair
Design Week/Month	1 2 3 4 5 6 7 8 9	Business Oriented
Design Week/Month	1 2 3 4 5 6 7 8 9	Show and Show Case
Design Week/Month	1 2 3 4 5 6 7 8 9	Fashion Week
Design Trade Fair	1 2 3 4 5 6 7 8 9	Business Oriented
Design Trade Fair	1 2 3 4 5 6 7 8 9	Show and Show Case
Design Trade Fair	1 2 3 4 5 6 7 8 9	Fashion Week
Business Oriented	1 2 3 4 5 6 7 8 9	Show and Show Case
Business Oriented	1 2 3 4 5 6 7 8 9	Fashion Week
Show and Show Case	1 2 3 4 5 6 7 8 9	Fashion Week
Competition and Calls	1 2 3 4 5 6 7 8 9	City Development
Competition and Calls	1 2 3 4 5 6 7 8 9	Design Center
Competition and Calls	1 2 3 4 5 6 7 8 9	Design University

City Development	1	2	3	4	5	6	7	8	9	Design Center
City Development	1	2	3	4	5	6	7	8	9	Design University
Design Center	1	2	3	4	5	6	7	8	9	Design University

Table 2. Gradation scale for quantitative comparison of alternatives

Numerical scale	Definition	Explanation
1	Equal	Two activities contribute equally to the objective
3	Moderate Importance	Experience and judgement slightly favor one over another
5	Strong	Experience and judgement slightly strongly one over another
7	Very strong	An activity is strongly favored and its dominance is demonstrated in practice
9	Absolute importance	Importance of one over another affirmed on the highest possible order
2, 4, 6, and 8	Intermediate values	Used to represent compromise between the priorities listed above

4.2.3 Determination of the weight of indicators by AHP

The pairwise comparison stage is an important aspect of doing analysis utilizing the AHP technique, which requires expert or respondent opinion to analyze. The online questionnaire has been finished, as previously mentioned by the researchers. In addition, a comparative analysis will be conducted to determine which indicators will have the greatest impact on Taipei City's status as a creative city of design. The pairwise comparison will be broken down into three sections: social, economic, and design and development. Below are the results of the pairwise comparison analysis.

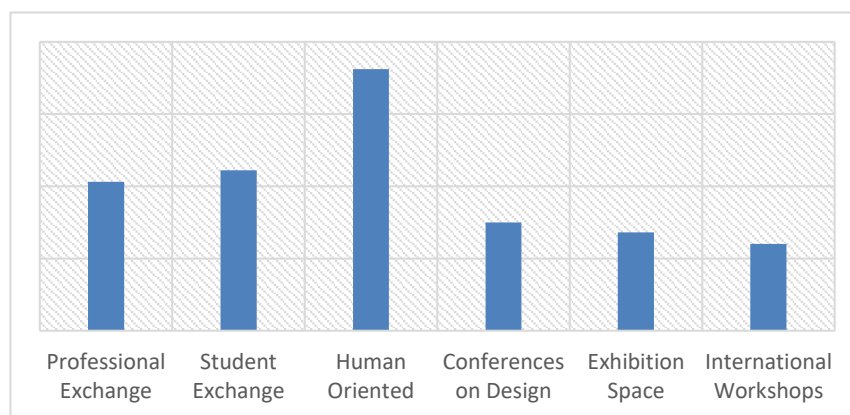


Fig 3. Social assessment results

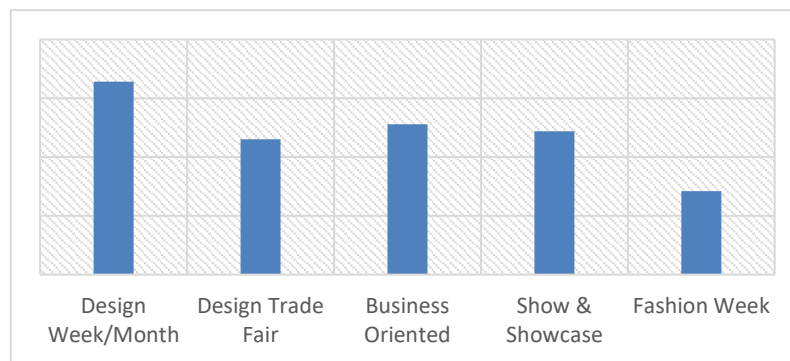


Fig 4. Economic assessment result

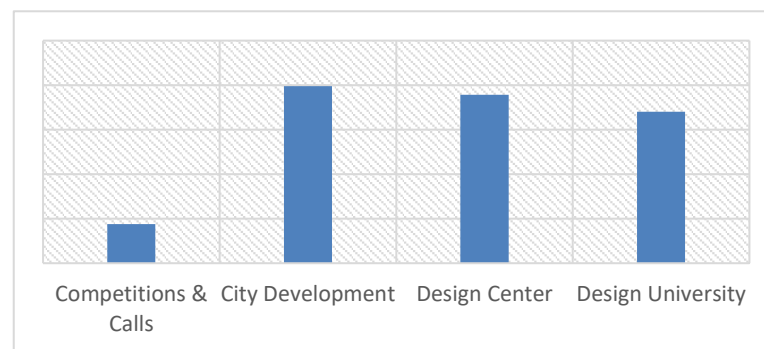


Fig 5. Design and Development assessment results

4.2.4 Measuring Consistency of the AHP matrix

One of the most crucial aspects of AHP analysis is consistency measurement. The goal of this consistency measurement is to determine which questionnaires are filled out consistently or inconsistently by experts. After doing AHP calculations, this consistency can be seen, and the following step is to review the AHP analysis results one by one. According to Saaty's AHP hypothesis, if the inconsistency rate is less than 10% or the CR value is less than 0.10, this suggests consistent assessment preferences. Based on the data analysis of all indicators which was carried out systematically and structured by the researcher, all consistency ratios were less than 10% or 0.10. Then the results indicate that the respondents gave the consistent answer in the pair comparison questionnaire and the number is acceptable.

CONCLUSION AND DISCUSSION

Measuring Taipei Creative City of Design (TCCD) indicators can contribute to the development of appropriate strategies and policies for cities facing unexpected shocks and their consequences. The measurement of Creative City of Design indicators is important for Taipei City due to its population and Taipei City is one of the world's cities' destinations for pursuing study, business, and vacation. So because of this, world recognition is needed as a city branding, following world-famous cities that have been received recognition from UNESCO firstly.

In addition to this, we identified a total of 15 key criteria for Taipei creative city of design (TCCD), and we grouped these indicators into three categories: social, economic, and design & development. We did a questionnaire survey study with experts to validate the parameters. Then, in the survey that we had performed, we conducted pairwise comparisons to acquire crucial criteria in terms of Taipei City as a creative city of design.

The AHP approach was used to examine the results of the pairwise comparison survey to determine the most important variables in the growth of Taipei as a creative city of design. The findings of the AHP analysis demonstrate that there are three most important variables, such as human-oriented, design week/month, and city development. From these findings, we underlining an important point in terms of the city of Taipei as a creative city of design. Taipei city has developed by a human-oriented concept, which is considering the social factor of design as a key issue of a city, and they have design week/month that regularly held monthly such as the city hosts a fair, in which companies from the design industry showcase their latest products and services, and good spatial planning that promotes inclusive development.

FURTHER STUDY

This research can be used as a first step in growing Taipei as a creative city of design since the goal of this study was to identify crucial variables in the

development of Taipei as a creative city of design. Due the purpose of this study is to identify significant aspects, it can be expanded into a more extensive investigation, such as examining the strengths and weaknesses of each priority indicator by relating them to local regulations.

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