Evaluating the Relation between Cultural Capital and Creative Industry Development by Grey Relation Analysis: Comparable Study of Creative Cities in Taiwan and Mainland China

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Abstract--**This research aims to provide an analysis derived by grey relation approach regarding how the cultural capital in a city affects regional creative industry development, particularly in a comparable study of different cultural cities in Taiwan and China. Under this circumstance, this research adopts the statistical data investigated by Asia Pacific Cultural and Creative Industry Association (CCIA) in 2011 and 2013, using grey relation approach to evaluate the most critical cultural capital in a city for developing cultural and creative industry. Three dimension of cultural capital, including cultural support, cultural context, and cultural creation, are used as selected criteria in this method. The output of creative industry development such as industry network, market development, and cultural commercialization, are adopted as a benchmark base in this grey relation analysis. To compare the difference across the strait, the survey in five Taiwan's municipalities and four China's municipalities are analyzed in different group, respectively. The research finding shows the essential cultural capital for developing creative industry in Taiwan's city is cultural context in 2011, and shift to cultural support in 2013. Contrarily, the critical cultural capital for creative industry development in China's city is cultural support in 2011, and shift to cultural creation in 2013.**

I. INTRODUCTION

This research aims to provide an analysis derived by grey relation approach regarding how the cultural capital in a city affects regional creative industry development, particularly in a comparable study of different cultural cities in Taiwan and China.

An early development in the industrial cluster research was the claim of industry competitive advantage in a geographical region [19]. A number of studies have been conducted to show the factors affecting the industrial clusters regarding how a region can be established as a industrial cluster, how an industry can be nurtured in a specific industrial cluster, or how an specific industry decide to invest in a geographical area [2][7][14][22]. However, as a new industry trend, industrial cluster research focusing on creative industry has not yet been much explored. There is also little investigation regarding the formulation of creative industry cluster. Similar discussion on creative industry cluster may be the concept of "creative city" in regional level, and taking creative city as a creative industry cluster [23][36]. However, there is still little empirical investigation discussing the factor such as cultural capital affecting the creative industry development in a creative city or cluster.

Under this circumstance, this research adopts the statistical data investigated by Asia Pacific Cultural and Creative Industry Association (CCIA) in 2011 and 2013 [12][13], using grey relation approach to evaluate the most critical cultural capital in a city for developing cultural and creative industry. Three dimension of cultural capital, including cultural support, cultural context, and cultural creation, are used as selected criteria in this method. The output of creative industry development such as industry network, market development, and cultural commercialization, are adopted as a benchmark base in this grey relation analysis. To compare the difference across the strait, the survey in five Taiwan's municipalities (Taipei, Taichung, New Taipei, Kaohsiung, and Tainan) and four China's municipalities (Beijing, Shanghai, Tienjing, and Chongqing) are analyzed in different group, respectively. The evolving trend in this issue will also be explored to compare with the change in 2011 and 2013.

II. CONCEPT OF INDUSTRIAL CLUSTERS

An early development in the industrial cluster research was the claim of industry development blocks defined by Emerson [20] to depict the industrial network relationship. Next, the theoretical basis of industrial cluster was proposed by Dixit and Stiglitz [19] in their famous monopolistic competition model. The concept of space and trade began to be discussed in the economic analysis, and formulate the field of New Economy Geography based on the conceptual tools of imperfect competition, increasing returns and pecuniary externelity, with three analytical models of the agglomeration of economics, including labor migration [27][33], up-down industry linkage [34][35][56][57], and R&D effect [8][40][45]. Some practical evidences, especially in the development of Silicon Valley, have been reported by Porter [47] and Saxenian [51] based on the above theoretical model. These models had also been further adopted in the analysis about the formulation of industrial clusters in different country [14][26][28][41][53].

There is a growing empirical literature on the researches of industrial clusters or agglomeration, which can be separated into several strands. These strands also represent the different schools to explain why and how an industrial cluster can be built and developed. A first group of studies focuses on the effect of knowledge diffusion and spillover. These discussions noted that knowledge could be reuse and absorbed by external groups through the knowledge flow

from the original creator, depending on the three characteristics of knowledge like externalities, expansibility, and accumulation [24][29]. Recently, the majority of research in knowledge diffusion has focused on the impact of industrial cluster, entrepreneurship, and regional R&D activities along with knowledge transfer or spillover [11][30]. In addition, another term of "localized spillovers" was also proposed to emphasize the role of geography proximity affecting the capabilities of knowledge spillovers [3][4][51]. These studies examine the importance of knowledge flow in the fields of economic geography and cluster effect.

A second group of studies highlights the factor of information sharing in cluster building. These studies in the literature emphasize the role of sharing mechanism in a region can create a industrial agglomeration by the exchange of information, manpower, market, resource, and supply chain among different enterprises [9][32]. Furthermore, another group of studies focuses on the concept of social capital. This school reveals that the formulation of social network in the dimension of social capital such as trust, relationship, understanding and collaboration, plays a critical role in cluster building [1][52]. Finally, another group of strategic studies discusses the development of industrial cluster from the view of strategic alliance. These literatures have suggested that the vertical or horizontal strategic alliance among different firms in an industrial value chain will result in a strategic cluster for creating competitive advantage or market demand [15][42][48][49].

III. CREATIVE CITY AS A CREATIVE INDUSTRY CLUSTER

As a new industry trend, industrial cluster research focusing on creative industry has not yet been much explored. There is also little investigation regarding the formulation of creative industry cluster. Similar discussion on creative industry cluster may be the concept of "creative city" in regional level. The concept of creative city can be traced back to the statement that "great cities have always been melting pots of races and cultures, out of the vivid and subtle interactions of which they have been the centers, there have come in the newer breeds and the newer social types" [46]. In addition, creative city is a term also stated by Landry [36] in his published book, "The Creative City: A Toolkit for Urban Innovators". He claimed that 21st century is the century of cities. Today, more than half people in the world live in cities, while only 29 percent lived in cities in 1980. Therefore, making cities comfortable places to live in becomes a critical issue, and lots of researches have published to enrich the knowledge of creative city.

According to the Landry [36], the definition of creative city is a new method of strategic urban planning and examines how people can think, plan and act creatively in the city. It explores how we can make our cities more livable and vital by harnessing people's imagination and talent". In the

newly-structured cities, creativity is one of the main currencies. Curiosity, imagination, creativity, innovation, and invention will be the five keys to develop creative cities. Meanwhile, Florida [23] portrayed creative city from a different perspective, explaining that the economic need towards creativity has produced a new class called "creative class". He defined the core of the creative class including technology, architecture, design, education, and art; they create new idea, new technology, and new creative context to the city. With the creative class, the city can attract more creative talents and form a future of city. On the other hand, Hospers [31] classified creative city in four kinds: technological-innovation cities, cultural-intellectual cities, cultural-technological cities, and technological-organizational cities. These four types of city or cluster have different development focus. Technological-innovation cities are the cities with innovate entrepreneurs due to the spirit of innovation, becoming a birthplace of new technology and technological revolution. Cultural-intellectual cities emphasize on cultural aspect. The artists, philosophers, or people with knowledge advocate revolution, and it contributes to the change of cultural art, and further attract more people to expand the abundance of cultural phenomenon. Cultural-technological cities are the cities owning the features of culture and technique, combining to form cultural industries, and these kinds of cities are the developing trend of city in 21st century. Technological-organizational cities are big-scale cities with the problems of infrastructure, traffic, accommodation, resources.

IV. FACTORS AFFECTING INDUSTRY DEVELOPMENT IN INDUSTRIAL CLUSTERS

After the concept of industrial cluster and its development, a number of literatures have been conducted to show the factors affecting the industrial clusters regarding how a region can be established as a industrial cluster, how an industry can be nurtured in a specific industrial cluster, or how an specific industry decide to invest in a geographical area, which can be separated into several strands. A first group of studies presents that firms will select investment location depending on the development of innovation system or technological system in a region [2][7][22]. It is reasonable to expect that industrial clusters will emerge from the location where innovation opportunity is available and accessible, such as the finding about the link between firms clustering and their probability to innovate [6]. These building blocks in the innovation system such as research institution, infrastructure, innovation network, and technology transfer mechanism, will affect the competitiveness of industrial cluster. Meanwhile, the factors of network externality [15] and market proximity [14][33] are sometimes the critical criteria while creating a new start-up in an industrial cluster. Another group of studies emphasizes the strategic consideration of regional specialization while

selecting investment criteria of industrial clusters. This strand reveals that firms will consider the investment location depending on the category of cluster specialization for integrating themselves into an industrial supply chain [5][10][21]. In addition, some researches elucidate the criteria affecting the development of industrial clusters from a system dynamics perspective [37][39]. These findings can be also adapted to devise the investment criteria for choosing industrial clusters.

In other empirical investigation, the categories of investment criteria proposed by Taiwan Electric and Electronic Manufacturers Association (TEEMA) in 2006 [54], reflect three major investment criteria of Taiwanese high-tech companies for choosing industrial clusters in China. Figure 1 shows these three major criteria including city competitiveness, investment environment, and investment risk, and their corresponding sub-criteria.

Most antecedent literatures aim to examine the factors or criteria affecting (manufacturing-based) industrial cluster, especially in high-tech industry cluster, but little is still known about the formulation of creative industry cluster at present. More recently, Hospers [31] demonstrates three factors that a creative city should own, including concentration, diversity, and instability. Florida [23] has clarified three key factors to construct the development of creative city called "3T": Technology, Talent, and Tolerance. He pointed out that these three factors are critical to attract creative talents, arouse the energy of innovation, and stimulate the growth of economy. In addition, Landry [36] deduced seven factors that a creative city should embed, namely, personal qualities, will and leadership, human diversity and access to varied talents, organizational culture, local identity, urban spaces and facilities, and networking dynamics. Finally, Roseman [50] also discussed this issue

about what makes cities and creative and competitive and raised five major components, encompassing: (i) affordable incubators for startups, (ii) unprogrammed (open) space for encounter, communication, presentation and exhibition, (iii) connectivity and accessibility (connected to the space of flows), (iv) attractive and affordable living space for the creative class (integration of working and living), and (v) city branding and good iconic design.

V. DEVELOPMENT OF CREATIVE CITIES AND INDUSTRY IN TAIWAN AND CHINA

At the latest Florida [23] came out in the book, the idea of creativity and innovation as a condition of urban success has been established. Cities all over the world are competing with each other to prove themselves as attractor for the "creative class" and as breeding place for creative industry and innovative enterprise. In the meantime almost every self-respecting city is developing its "Silicon Valley" or at least its creative cluster. As a result, to evaluate the development of creative cities in Taiwan and China, the evolving role of cultural and creative industry need to be reviewed to compare how the government plays the role to facilitate the industry development. Taiwanese government selected cultural and creative industry as a national development project in early 2000s. In an effort to effectively foster the cultural and creative industries, the Cultural and Creative Industry Development Project has been promoted since 2009, and the Cultural and Creative Industry Development Law was also legislated in 2010 to define the category of this industry in Taiwan. As creative enterprises mature, they have different needs such as capital, talent, research & development and market orientation. The flagship project aims to use different
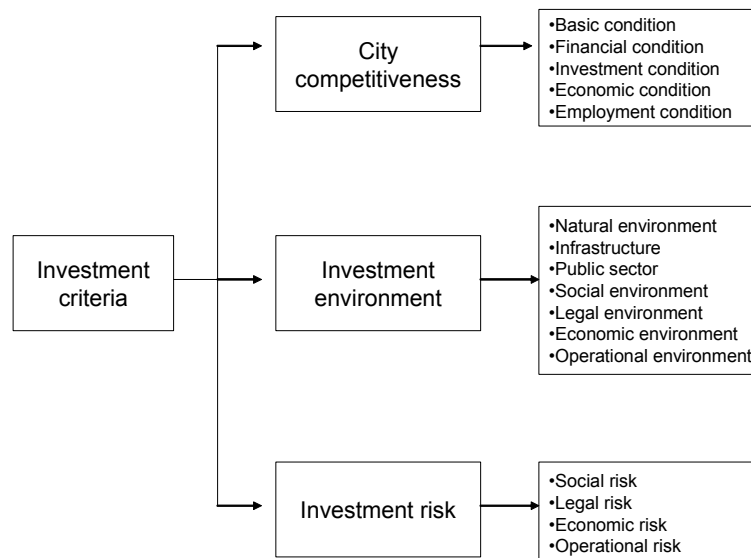

Figure 1 Investment criteria for choosing industrial clusters
Source: [54]

kind of strategic tool available and leading creative enterprises to vigorous growth. From current industries, the flagship plan also selects those that are more mature, possess greater output potential, and offer beneficial industry connections and propose a plan directed at their developmental characteristics and needs [38][43].

On the other hand, China government selected cultural and creative industry as an emergent target from the "12th Five-Year Development Plan" in 2011. The cultural and creative industry development planning outline was also announced in this year. Compared with the proposed category of cultural and creative industry in Taiwan, China government has more emphasis on publishing and animation/game industries, but do not cover the category of design industry, including product design, visual design, architecture, and advertising sectors. Meanwhile, cultural and creative industry in China also has more focus on its advantage of affluent Chinese cultural resource and sizeable domestic market [38][44]. Table 1 lists some basic comparison of cultural and creative industry between China and Taiwan.

TABLE 1 COMPARISON OF CULTURAL AND CREATIVE INDUSTRY (CCI) IN TAIWAN AND CHINA

	Number of CCI official category	CCI occupation in GDP	CCI occupation in employment
Taiwan	15	2.65 %	2.06 %
China	7	2.45 %	1.48 %

Source: [38]

VI. RESEARCH METHOD

This section will elaborate the research method used in this research, to answer the research question regarding the relation between cultural capital and creative industry development in a creative city. The research design and construct to evaluate the cultural capital and creative industry development will be firstly introduced. Secondly, the grey relation analysis will be reviewed to explain the methodology. Finally, the source of numerical data in cultural capital and creative industry development in Taiwan and China will be subsequently listed as follows.

A. Research Design

This study selects five Taiwan's municipalities and four China's municipalities as empirical cases, respectively. These nine major cities all have their own creative and industrial basis for developing creative city or cluster, and also share similar cultural identity with support of traditional Chinese and Confucias culture. It will be appropriate to discuss the factors affecting the development of creative industry cluster. As a result, the research adopts the statistical data investigated by Asia Pacific Cultural and Creative Industry Association in 2011 and 2013, to 1,911 and 2,018 cultural and creative-related industry managers [12][13], to make an empirical case analysis, using grey relation approach to evaluate the most critical factor of cultural capital affecting creative industry development in a region, while selecting five Taiwan's munipalities such as Taipei, Taichung, New Taipei, Kaohsiung, and Taiwan, and four China's munipalities such as Beijing, Shanghai, Tienjing, and Chongqing.

To answer the research question regarding the relation between cultural capital and creative industry development in a creative city, three factors regarding cultural capital in this CCIA's investigation will be used as selected criteria such as the input in a creative city. They are cultural support, cultural context, and cultural creation. The result of creative industry development in CCIA's investigation will be adopted as the output of creative industry in a creative city. In this survey, cultural support means the environmental support from local government and community in this city. Cultural context accounts for the original resource and circumstance related to cultural content in this city. Meanwhile, cultural creation is the cultural value created or regenerated by the citizen in this city. In addition, creative industry development means the economic output about cultural and creative sectors in this city. Table 2 depicts the content of each criterion in CCIA's survey and some examples in each items is raised for further understanding.

TABLE 2 SELECTED CRITERIA IN GREY RELATION ANALYSIS

| Criteria		Item	Examples
Cultural Capital	Cultural support	• Policy support • Institutional support • Infrastructure • Local support	• Taxation policy for promoting culture • Public institution for creative industries • Infrastructure related to culture (media) • Support from local community (Cultural association)
	Cultural context	• Resource condition • Cultural atmosphere • Human capital	• Historical heritage for cultural regeneration • Environmental milieu about culture • Creative talents in a region
	Cultural creation	• Diversify value • Clustering • Creativity • Cultural taste	• Diversity of culture and industry • Industrial proximity about creative sectors • Change and innovation from cultural elements • Cultural preference from local citizen
Creative Industry Development		• Industry network • Market development • Cultural commercialization	• Creative industry chain and enterprises • Market size and segmentation about culture • Maturity of cultural goods in market

Source: [12][13]
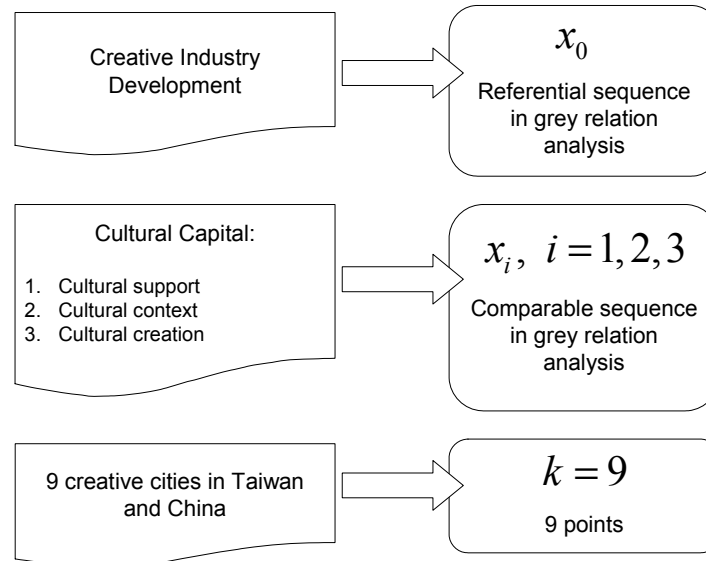
Figure 2 Research structure of grey relation analysis

As a result, the empirical study will use the approach of grey relation analysis shown as Figure 2 explains the designed structure in this empirical analysis. The creative industry development in Table 1 will be taken as referential sequence x_0 in grey relation analysis, and the cultural capital involving cultural support, cultural context, and cultural creation will represent the three comparable sequences x_i in comparison with the referential sequence x_0. In addition, nine creative city (five in Taiwan, and four in China) in this study mean the 9 points k, with $x_0(k)$ and $x_i(k)$ representing, respectively, the numerals at point k for x_0 and x_i.

B. Grey Relation Analysis

Grey theory, proposed by Deng in 1982 [16], is an effective mathematical means to deal with systems analysis characterized by incomplete information. Grey relation refers to the uncertain relations among things, among elements of systems, or among elements and behaviors. The relational analysis in the grey system theory is a kind of quantitative analysis for the evaluation of alternatives. Grey theory is widely applied in fields such as systems analysis, data processing, modeling and prediction, as well as control and decision-making [17][18][55]. Due to the presence of incomplete information and uncertain relations in a system, it is difficult to analyze it by using ordinary methods. On the other hand, grey system theory presents a grey relation space, and a series of nonfunctional type models are established in this space so as to overcome the obstacles of needing a massive amount of samples in general statistical methods, or the typical distribution and large amount of calculation work. In this section, we briefly review some relevant definitions and the calculation process for the grey relation model.

DEFINITION 1. Let X be a decision factor set of grey relations, $x_0 \in X$ the referential sequence, and $x_i \in X$ the comparative sequence; with $x_0(k)$ and $x_i(k)$ representing, respectively, the numerals at point k for x_0 and x_i. If $\gamma(x_0(k), x_i(k))$ and $\gamma(x_0, x_i)$ are real numbers, and satisfy the following four grey axioms (Deng, 1989), then we call $\gamma(x_0(k), x_i(k))$ the grey relation coefficient of these factors in point k, and the grade of grey relation $\gamma(x_0, x_i)$ is the average value of $\gamma(x_0(k), x_i(k))$.

1. Norm interval

$$0 < \gamma(x_0, x_i) \le 1, \ \forall k;$$
$$\gamma(x_0, x_i) = 1, iff \ x_0 = x_i;$$
$$\gamma(x_0, x_i) = 0, iff \ x_0, x_i \in \phi;$$

where ϕ is an empty set.

2. Duality symmetric

$$x, y \in X \Rightarrow \gamma(x, y) = \gamma(y, x), iff \ X = \{x, y\};$$

3. Wholeness

$$\gamma(x_i, x_j) \overset{often}{\ne} \gamma(x_j, x_i), iff \ X = \{x_i | i = 0, 1, 2, ..., n\}, \ n > 2;$$

4. Approachability

$\gamma(x_0(k), x_i(k))$ decreasing along with $|(x_0(k) - x_i(k))|$ increasing.

Deng also proposed a mathematical equation, which satisfies the above four axioms of grey relation, and for the grey relation coefficient is expressed as

$$\gamma(x_0(k), x_i(k)) = \frac{\min_i \min_k |(x_0(k) - x_i(k))| + \zeta \max_i \max_k |(x_0(k) - x_i(k))|}{|(x_0(k) - x_i(k))| + \zeta \max_i \max_k |(x_0(k) - x_i(k))|}$$

where $|(x_0(k) - x_i(k))| = \Delta_i(k)$, and ζ is the distinguished coefficient ($\zeta \in (0,1)$).

DEFINITION 2. If $\gamma(x_0, x_i)$ satisfies the four grey relation axioms, then γ is called the grey relational map.

DEFINITION 3. If Γ is the entirety of the grey relational map, $\gamma \in \Gamma$ satisfies the four axioms of grey relation, and X is the factor set of grey relation, then (X, Γ) is called as the grey relational space, while γ is the specific map for Γ.

DEFINITION 4. Let (X, Γ) be the grey relational space, and if $\gamma(x_0, x_j), \gamma(x_0, x_p), ..., \gamma(x_0, x_q)$ satisfy $\gamma(x_0, x_j) > \gamma(x_0, x_p) > ... > \gamma(x_0, x_q)$, then we have the grey relational order as $x_j > x_p > ... > x_q$.

The analysis of grey relation is conducted with its basis of developmental trends, so there are not strict requirements for the sample size, the typical distribution of statistics is not at all necessary, and the calculation is rather simple.

C. Source of Data

This section will show the original data used in grey relation analysis. Table 3 lists the results of CCIA's investigation in five Taiwan's municipalities both in year 2011 and 2013. Evaluated scores in three types of cultural capital including cultural support, cultural context, and cultural creation, were selected as three comparable sequences. Secondly, the evaluated scores of creative industry development will be selected as a referential sequence in grey relation analysis.

In meanwhile, to compare the development difference in each cluster, Table 4 shows the results of CCIA's investigation in four China's municipalities both in year 2011 and 2013. Evaluated scores in three types of cultural capital including cultural support, cultural context, and cultural creation, were also selected as three comparable sequences. Secondly, the evaluated scores of creative industry development will also be selected as a referential sequence in grey relation analysis.

VII. RESEARCH RESULT

This section will reveal the findings from grey relation analysis in Taiwan and China, respectively. The most critical factor of cultural capital affecting creative industry development will be discussed in this section. In the numerical analysis, the given weighting of each municipality is the same. Next, a comparable discussion will be also done to elaborate the difference of creative cluster development between Taiwan and China.

A. Findings from Taiwan's Municipalities

This section firstly shows the most critical factor of cultural capital affecting Taiwan's creative industry development. Table 5 offers the results of grey relation analysis that reflect the ranking of grey relation coefficient between the three types of cultural capitals in Taiwan in 2011. This finding reveals that the most important factor affecting creative industry development in 2011 are cultural context, cultural support, and cultural creation, in turn.

TABLE 3 EVALUATED SCORES OF TAIWAN'S MUNICIPALITIES

City	Cultual Capital						Creative Industry Development	
	Cultural support		Cultural context		Cultural creation			
	2011	**2013**	**2011**	**2013**	**2011**	**2013**	**2011**	**2013**
Taipei	90.88	92.14	90.51	91.14	96.82	96.79	96.05	96.73
Taichung	86.99	85.95	83.27	81.57	85.21	81.47	88.57	94.43
New Taipei	79.35	90.31	78.59	87.48	76.73	81.17	83.58	87.25
Kaoshiung	83.01	84.82	87.59	84.2	83.27	81.65	88.89	87.37
Tainan	75.18	80.53	80.19	85.28	79.39	81.85	84.42	86.66

Source: [12][13]

TABLE 4 EVALUATED SCORES OF CHINA'S MUNICIPALITIES

City	Cultural Capital						Creative Industry Development	
	Cultural support		Cultural context		Cultural creation			
	2011	**2013**	**2011**	**2013**	**2011**	**2013**	**2011**	**2013**
Beijing	94.18	97.43	96.46	97.36	94.33	95.11	97.71	98.67
Shanghai	97.34	98.89	92.96	92.74	98.16	97.84	97.85	98.28
Tianjin	70.91	84.85	66.48	79.77	67.63	79.48	77.25	76.37
Chongqing	76.19	78.88	79.03	78.28	74.92	77.66	83.37	83.92

Source: [12][13]

TABLE 5 GREY RELATION ANALYSIS OF TAIWAN'S
MUNICIPALITIES IN 2011

Cultural capital	Cultural support	Cultural context	Cultural creation
Grey relation coefficient	0.729	0.845	0.517
Ranking	2	1	3

Secondly, Table 6 reveals the results of grey relation analysis that reflect the ranking of grey relation coefficient between the three types of cultural capitals in 2013. This finding indicates that the most important factor affecting creative industry development in Taiwan in 2013 are cultural support, cultural context, and cultural creation, in turn.

TABLE 6 GREY RELATION ANALYSIS OF TAIWAN'S
MUNICIPALITIES IN 2013

Cultural capital	Cultural support	Cultural context	Cultural creation
Grey relation coefficient	0.724	0.677	0.590
Ranking	1	2	3

B. Findings from China's Municipalities

Moreover, this section also shows the most critical factor of cultural capital affecting China's creative industry development. Table 7 offers the results of grey relation analysis that reflect the ranking of grey relation coefficient between the three types of cultural capitals in China in 2011. This finding reveals in 2011 that three factors all contribute similar effect on industry development because their coefficient values are almost similar. The most important factor affecting creative industry development in 2011 are cultural support, cultural context, and cultural creation, in turn.

TABLE 7 GREY RELATION ANALYSIS OF CHINA'S
MUNICIPALITIES IN 2011

Cultural capital	Cultural support	Cultural context	Cultural creation
Grey relation coefficient	0.679	0.626	0.609
Ranking	1	2	3

Secondly, Table 8 reveals the results of grey relation analysis that reflect the ranking of grey relation coefficient between the three types of cultural capitals in China in 2013. This finding also shows in 2013 that three factors contribute similar effect on industry development because their coefficient values are almost close. The most important factor affecting creative industry development in 2013 are cultural creation, cultural support, and cultural context, in turn.

TABLE 8 GREY RELATION ANALYSIS OF CHINA'S
MUNICIPALITIES IN 2013

Cultural capital	Cultural support	Cultural context	Cultural creation
Grey relation coefficient	0.649	0.638	0.656
Ranking	2	3	1

C. Comparable Discussion

From Table 5 to Table 8, the results from grey relation analysis can be summarized to compare the difference between Taiwan and China in different year. Table 9 shows this comparable result, and reveals that the relation between cultural capital and creative industry development may vary along with the characteristic of cities and their development stage. Taken Taiwan as a case, the difference of grey relation coefficient in each factor is relatively big, revealing there are really some factors of cultural capital affecting creative industry development and need to be obviously emphasized. The development trend in recent year shows the most critical factor is cultural context in 2011, and shift to cultural support in 2013. This result depicts in Taiwan the cultural context such as resource condition, cultural atmosphere, and human capital is important at early stage to create the cultural identity in a city, however, the subsequent development in a creative city will need to be supported by policy preference, infrastructure, and related institution from central and local government. This result also reveal the cultural creation is not relatively important for creative industry development because the creative business and talents easily move everywhere in Taiwan, that the cultural creation may not be a city or region-specific factor in small-scale country.

TABLE 9 COMPARABLE RESULT BETWEEN TAIWAN AND CHINA

		2011		2013	
		Coefficient	Ranking	Coefficient	Ranking
Taiwan	Cultural support	0.729	2	0.724	1
	Cultural context	0.845	1	0.677	2
	Cultural creation	0.517	3	0.590	3
China	Cultural support	0.680	1	0.649	2
	Cultural context	0.626	2	0.638	3
	Cultural creation	0.609	3	0.656	1

Secondly, taken China as a case, the difference of grey relation coefficient in each factor is relatively small, showing that different cultural capital should be equally critical in China's city. The development trend in recent year shows the most critical factor is cultural support in 2011, and shift to cultural creation in 2013. This result depicts in China the cultural support from governmental policy is important at early stage to lower the entry barrier for creative entrepreneurs in a city, however, the subsequent development in a creative city will need to be sustained by developing cultural creation from clustering, creativity, and diversity effect. This result also reveals the cultural context is not relatively important for creative industry development. The possible reason is that the scale of these four municipalities in China is very large and their cultural context such as human capital, cultural atmosphere, and resource condition do not really have big difference with each other.

Thirdly, comparing with the difference between Taiwan and China, the cultural support from government is both important to establish or sustain the basis of creative industry.

However, cultural context seems to play a relatively important role in Taiwan, and cultural creation provides a bigger impact in China. The reason should be that the cultural identity in different city in Taiwan actually does not vary a lot due to a relative small scale. The factor affecting the demand side such as cultural context probably contributed more in creative industry development in Taiwan. On contrary, the other factor affecting the supply side such as cultural creation in business, product, or service may play a relatively critical role in creative industry development in China.

VIII. CONCLUSIONS

The study reveals that the relation between cultural capital and creative industry development may vary along with the characteristic of cities and their development stage. The grey relation analysis shows the essential cultural capital for developing creative industry in Taiwan's city is cultural context in 2011, and shift to cultural support in 2013. Contrarily, the critical cultural capital for creative industry development in China's city is cultural support in 2011, and shift to cultural creation in 2013. In addition, the findings also reveal the cultural creation is not relatively important for creative industry development in Taiwan because the creative business and talents easily move everywhere, that the cultural creation may not be a city or region-specific factor in small-scale country. Contrarily, the cultural context is not relatively important for creative industry development in China because the scale of these four China's municipalities is very large and their cultural context such as human capital, cultural atmosphere, and resource condition do not really have big difference with each other.

Meanwhile, for policymakers of local governments in Taiwan and China, the results of this research could provide some strategic suggestions that the resource allocation should be arranged firstly depending on the preferable cultural capital in different stage. Not only does it offer a strategic suggestion of cultural capital evaluation in creative industry development, it also provides an implication of resource allocation for policymakers of local governments in each creative city.

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