

# Traditional Tea Manufacturing Facilities: Strategies for Industrial Transformation

**s.raijyasulthana**

Mtech,Cse,BCETW.A.p,Cse

## Abstract

Traditional manufacturing factories in Taiwan have closed down or relocated to countries with cheaper production costs as a result of these rising prices. This has caused a severe problem of competitiveness for the few Taiwanese industries that have their roots on the island. The tea business is no different. There have been fewer tea factories and less growth in the industry as a result of a decline in Taiwan's tea plantation area and the number of tea farmers, as well as a reluctance on the part of young people to take over the factories. Citizens in Taiwan have begun to value recreation and amusement more highly as the economy has improved, and this growing demand has fueled the booming growth of Taiwan's tourist sector. This phenomena might be used by traditional tea companies as the fuel for their change. Data collection, analysis, and interpretation, as well as the identification of successful cases of industrial transformation in the tea industry, were accomplished through the use of a literature review and a modified Delphi technique. The study's overarching goal is to provide criteria for evaluating the efficacy of various approaches to facilitating the industrial transformation of conventional tea factory owners and managers.

According to the findings, "corporate theme and marketing context" is the most important criterion for evaluating a company's readiness for industrial transformation, followed by "industrial link and resources integration," "team internal structure," "value of the product and factory visit," and "spatial design and layout." tourist factory, tourist tea factory, tea culture (story) museum, and tea house all rank highly as potential alternative transformation strategies.

Keywords: Tea Production Facilities; Industrial Change; Modified Delphi Technique

## 1. Introduction

The phenomenon where enterprise competitiveness is dependent upon the transition from a "investment-driven" economy to a "innovation-driven" economy [1] arises from the fact that businesses are constantly transforming themselves and seeking innovation and change in order to achieve the goal of sustainable development. The early 1980s were a fruitful time for Taiwanese industrialization. The mid-1980s saw a rise in worldwide rivalry as a result of the oil crisis. Because to the deteriorating economic climate, rising prices of land and labor, and strengthening New Taiwan Dollar, many labor-intensive companies left Taiwan quickly. Industrial relocation and factory closure also resulted in the inactivity of lands or premises of traditional industries in Taiwan [2] as a result of the government's vigorous promotion of high-tech industries and traditional industries' one-by-one transfer of factories to regions of cheaper prices. The tea business is no different. Most traditional tea factories have seen their growth slow due to a decline in the number of facilities producing tea. Due to the country's thriving economy, tea consumption in Taiwan has skyrocketed in recent years. There has been a shift toward cheaper tea leaves and the canning of tea beverages, as well as the opening of chains of tea stores. Therefore, the urgent and significant concerns for the tea producers are the adoption of industrial transformation and refined industrial operation, and industrial transformation of the tea industry is a practicable plan [3].

Several viable proposals for bolstering industries were put out by the Ministry of Economic Affairs of R.O.C. It introduced the "Tourism Factory Plan" in 2003 to give businesses in the tourism industry a leg up.

methods [4]. The cultural creative business has been on the rise since 2009, when Executive Yuan advocated his "Six Key Emerging Industries" [5]. Many businesses in the traditional tea industry have been actively transforming into the modern industrial sector in recent years, thanks to the effective help and support for local distinctive industries. Creativity and tourism have also played a role in turning the industrial crisis into an opportunity [6].

This research aimed to provide objective evaluation criteria by synthesizing the views of experts and studying the elements influencing the selection of industrial transformation by traditional tea plant owners. Based on the findings, the authors of this paper provide recommendations and offer additional analysis of four potential schemes for implementing industrial transformation in tea production facilities.

## 2. Literature Review

This study intends to investigate the current status of development of tea industry in Taiwan, as well as the theories concerning industrial transformation of traditional tea factories. The literature review is as follows:

### 2.1 Outline of Development of Tea Industry in Taiwan

The restrictions on tea leaf import into Taiwan were loosened as early as in 1971. However, it was not until 1986 was the import/export of tea leaves changed to bulk import. As a matter of fact, in the past where tea leaf export was in the prime, the tea leaves exported abroad were mainly cheaper ones, and only a small proportion of expensive high-quality tea leaves were exported. At present, cheaper tea leaves from the Southeast Asia and China have replaced those in Taiwan. Under the situation where there is no international market for expensive tea leaves, the export of expensive tea leaves certainly has been changed to import of them. During the change from export to import, the current tea market has been transformed, and the industrial transformation of tea industry has become an inevitable trend [7].

### 2.2 General Status and Operation Types of Tea Industry in Taiwan

The present tea industry in Taiwan has a wide variety of business models and organizational structures. It would seem that the vast majority of businesses utilize either horizontal or vertical operation. The modern Taiwanese tea business includes such subsectors as tea art forums, tea houses, online tea shopping, tea set shops, tea supplier groups, and statewide tea research and extension stations [8]. There are probably over a thousand shops, all running somewhat differently. Therefore, the consumption of tea and the functioning of the tea business are regular occurrences among the people of Taiwan. Micro industrial transformation and even bigger structural transformation are trends that have affected most conventional sectors as a result of ongoing societal changes and the adoption of the five-day workweek. Because of this, a new system for categorizing establishments associated with the tea business has been devised. This system includes tea art museums, tea culture museums, tea museums, and tea narrative museums. Thus, society's customers are appealed by a revamped tea sector that offers them a wide range of "tea"-related services.

### 2.3 Outline of Industrial Transformation

Many established businesses have adopted "transformation" as a key operational strategy. On the one hand, the external environment conventional industries operate in is constantly changing. They must also adapt to the maturation of their own life cycles and the shifting pros and cons of their operations [9]. Industrial pattern, operational pattern, product, market, and operational structure are the five facets of change that Moriguchi Hachiro identified [10]. Manpower, planning, and funding are the most critical variables in the successful industrial transformation of company organizational structure [11]. There are two main types of management practices: primary and secondary. Strategic planning, flawless execution, a company culture focused on results, and a lean, nimble structure are all cornerstones of effective management. Talent retention, talent nurturing, leadership focus on running the business, industrial innovation, and expansion via mergers and partnerships are all examples of secondary management strategies [12].

### Version 2.4 of the Delphi Approach

Expert judgment (or the Delphi method) is a technique used in qualitative research. It's a way to combine the thoughts of many specialists in one place, and it's used in research. The Delphi method is used to conduct research on a particular subject by using the unique perspectives and expertise of a panel of experts via several iterations of questions and answers and statistical analysis. The main difference between the modified Delphi technique and the original Delphi method is that the latter uses an open-ended questionnaire survey in round 1, while the former does not

### 3. Research Method

This study develops the assessment criteria of strategies for industrial transformation of traditional tea factories as reference for tea industry operators. The questionnaire survey is conducted to propose suggestions and obtain results. The research process is as follows:

#### 3.1 Modified Delphi Method Expert Questionnaire Survey

Scholars, specialists, experts from tea groups and unions, and experts from tea factories met the criteria for selection in this research. Based on the criteria used to pick experts for the questionnaire, the respondents in this research were mostly business owners in the tea sector who offer tea leaves and tea-related items. The people who filled out the questionnaire on potential alternatives are the same people who filled out the original questionnaire. In this research, the questionnaire responses were used to determine the relative importance of several methods for industrial transformation of tea industry operators. To provide preliminary evaluation dimensions, a modified Delphi technique expert questionnaire survey was carried out. Books, articles, journals, and internet resources were consulted for this in-depth analysis and data collection. In addition, 7 questions were developed in a preliminary phase of the research based on the content of a review on the guiding plan of tourist factories conducted by the Industrial Technology Research Institute, and two judgment criteria, "consistency" and "stability," were utilized as the indicators of the completion of the expert questionnaire survey.

#### Measurement Tools for the Modified Delphi Method, Version 3.2

This research examined and summarized the findings of the specialists. We based our measures of central tendency and measures of variance on the checkboxes that respondents indicated were most and least important to them. Two indices of completion of the expert questionnaire survey were utilized in this study: consistency and stability. This research employed the "AVERAGE" function to determine the average ( $\mu$ ), the "STDEV" function to determine the standard deviation ( $\sigma$ ), and the "/" function to determine the coefficient of variation (cv) after each round of questionnaires was returned (Murry & Hommons, 1995).

#### 3.2 Judgment of Importance

Mean is a measure of central tendency in statistical data, and is mainly used to reflect the degree of concentration of data. Therefore, this study used mean ( $\mu$ ) as the indicator of importance. When mean ( $\mu$ )  $\geq 3.5$  (70% in 5-point scale), the members of panel of experts suggested that the item is very important and should be retained.

#### 3.3 Judgment of Degree of Consistency of Importance

SD and coefficient of variation are used to reflect the degree of concentration and dispersion of experts' answers to a certain item. When mean ( $\sigma$ )  $\geq 1$  and coefficient of variation (cv)  $\geq 0.5$ , the degree of dispersion of the item is too large and the opinions of experts are inconsistent. Therefore, the item should be deleted. If the difference in SD between the former and the latter rounds is gradually decreased, the degree of convergence is reached. When mean ( $\sigma$ )  $< 1$  and coefficient of variation (cv)  $< 0.5$ , the preliminary consensus is reached.

In the first round modified Delphi method questionnaire survey, the original 7 assessment criteria were adjusted to 5 assessment criteria. In the second round modified Delphi method questionnaire survey, the results showed that the experts agreed with the 5 assessment criteria in round 1. Therefore, the 5 assessment criteria were retained.

In addition to various criteria, the "field of other opinions" was also included in the round 1 questionnaire to enable the experts to provide other suggestions according to personal professional experiences to develop impeccable assessment criteria. In the end, the experts were also invited to provide appropriate suggestions on industrial transformation schemes for the use of selection of schemes in this study. The results of round 1 questionnaire survey are shown in Table 1.

Table 1: Table captions should be placed above thetable

Assessment Criteria	Frequency Distribution					Mean	SD	CV	/	Retain / Delete	Other Opinions
	5 (VI)	4 (I)	3 (N)	2 (U)	1 (VU)						
	Very Important	Important	Neutral	Unimportant	Very unimportant						
A. Spatial design and layout inside and outside of the factory	44	66	11	00	00	4.27	0.86	0.20		Retain	To delete The words "inside and outside."
B. Uniqueness of product development	66	55	00	00	00	4.55	0.60	0.13		Retain	Combine B and C
C. Features of factory visit	44	66	11	00	00	4.27	0.86	0.20		Retain	Combine B and C
D. Consensus of the management team	77	44	00	00	00	4.64	0.54	0.12		Retain	Combine D and E
E. Budget and personnel support	66	55	00	00	00	4.55	0.60	0.13		Retain	Combine D and E
F. Industrial link and resources integration	55	66	00	00	00	4.45	0.65	0.15		Retain	

Table 2: Results of the second round modified Delphimethod questionnaire survey

Assessment Criteria	Frequency Distribution					Mean	SD	CV	/	Retain / Delete	Other Opinions
	5 (VI)	4 (I)	3 (N)	2 (U)	1 (VU)						
	Very Important	Important	Neutral	Unimportant	Very unimportant						
A. Spatial design and layout inside and outside of the factory	44	66	11	00	00	4.27	0.86	0.20		Retain	To delete The words "inside and outside."
B. Uniqueness of product development	66	55	00	00	00	4.55	0.60	0.13		Retain	Combine B and C
C. Features of factory visit	44	66	11	00	00	4.27	0.86	0.20		Retain	Combine B and C
D. Consensus of the management team	77	44	00	00	00	4.64	0.54	0.12		Retain	Combine D and E
E. Budget and personnel support	66	55	00	00	00	4.55	0.60	0.13		Retain	Combine D and E
F. Industrial link and resources integration	55	66	00	00	00	4.45	0.65	0.15		Retain	
G. Corporate theme and marketing context	59	62	00	00	00	4.82	0.40	0.08		Retain	

As shown in Table 2, the results of the second round modified Delphi method expert questionnaire survey showed that the experts agreed with the revised 5 assessment items after round 1. Therefore, these 5 assessment criteria were all retained, and the questionnaire survey was thus ended. According to the results of the first round This study applied modified Delphi method to the investigation on strategies for industrial transformation of traditional tea factories. The assessment criteria with which the experts consistently agreed and the alternative schemes as recommended by them can be provided as reference for traditional tea factories to assess industrial transformation.

questionnaire survey, the original 7 assessment criteria were revised as 5 assessment criteria, including spatial design and layout of the factory, team internal structure, value of the product and factory visit, industrial link and resources

integration, and corporate theme and marketing context. These 5 assessment criteria were used to conduct the second round questionnaire survey. The results are shown in Table 2:

The 5 main assessment criteria and 4 major schemes in this study can help traditional tea factories that intend to implement industrial transformation. The 5 main assessment criteria are spatial design and layout of the factory, value of product and factory visit, team internal structure, industrial link and resources integration, and corporate theme and marketing context. The 4 major schemes are tourism factory, tourism tea factory, tea art (story) museum, and tea house.

#### 4. Results Analysis

This study analyzed the results of the assessment criteria of questionnaire on alternative schemes, and found that the assessment criteria included spatial design and layout, value of the product and factory visit, team internal structure, industrial link and resources integration, and corporate theme and marketing context. The four alternative schemes were – tourism factory, tourism tea factory, tea house, and tea art (story) museum, and their scores are shown in Table 3.

The model was used to perform the overall assessment on alternative schemes. The priority (order) of alternative schemes was determined according to the rank of main criteria. The alternative scheme with the highest score is the most suitable alternative scheme. According to the results of scores, the order is tourism factory (0.346) > tourism tea factory (0.303) > tea art (story) museum (0.227) > tea house (0.124). In general, according to the verification results of main criteria for alternative schemes, “tourism factory” is the most suitable alternative scheme for industrial transformation of traditional tea factories.

Table 3: Scores of main criteria for alternative schemes

Assessment Criteria	Tourism Factory	Tourism Tea Factory	Tea House	Tea Art (Story) Museum
Spatial design and layout	0.043	0.041	0.012	0.029
Value of the product and factory visit	0.046	0.045	0.012	0.041
Team internal structure	0.058	0.040	0.029	0.019
Industrial link and resources integration	0.079	0.068	0.019	0.061
Corporate theme and marketing context	0.120	0.108	0.052	0.077
Total	0.346	0.303	0.124	0.227
Order	1	2	4	3

The scores of numerous alternative systems are analyzed in terms of a single major criteria, as follows: Restrooms, sales and exhibition areas, presentation rooms, outside parking, and landscaping are all part of the factory's overall spatial design and layout. Providing tours and merchandise for customers is essential for any tourism factory. Therefore, this criteria for evaluation yields the highest score, followed closely by the tourist tea factory (a difference of about 0.002).

Product and process value, industrial culture, and product variety all contribute to the worth of a trip to the plant. There is no statistically significant difference between the ratings of three alternative schemes (the tourist factory, the tourism tea factory, and the tea art (story) museum) on this criteria, indicating that each plan values its unique visit value.

Tourism Factory outperforms the other three proposed methods by a wide margin (a difference of ) in the criteria of team internal structure.

0.018 ahead of the runner-up). The reason for this is because promoting an internal power, such as money, personnel, cohesion, team consensus, and subsequent planning and execution, is necessary for a tourist factor to pass numerous guideline accreditations.

The prerequisites that a tourism factory must satisfy are the involvement of the government and its resources, the availability of tourist routes, and a sufficient number of visitors. As a result, the tourist factory received the best possible rating while the tea house received the lowest. According to the experts, the government's plan to help the tea sector is unrelated to the growth of teahouses.

Designing a corporate identification system, creating packaging, arranging a tour, instructing tour guides, and putting up a website are all part of the larger marketing and branding picture. The tourist consideration received the greatest possible rating in this category. This is because a mass-production tourist attraction requires a cohesive brand identity, comprehensive tour, and propagandist marketing strategy. This standard is also used as an endorsement of the tourism manufacturing facility. The

This criterion's content is also almost present in a fully developed tourist tea factory. A tea factory catering to tourists, on the other hand, is not as comprehensive. Thus, the tourist tea plant ranks second. The teahouse comes in dead last. According to the experts, the importance of tourism and advertising to teahouses has decreased even more.

## 5. Conclusion

In this research, alternatives are identified via a literature review and a questionnaire survey using a modified version of the Delphi technique. When it comes to implementing industrial transformation in the tea sector, the findings of this study may also give objective and effective evaluation and selection criteria. The study's findings were confirmed and may serve as a guide for the present traditional tea factories as they undergo industrial change.

The study's five evaluation criteria and four main programs may help conventional tea plants transition into the modern manufacturing sector. According to a survey of experts who looked into the topic of industrial transformation strategies for traditional tea factories, "corporate theme and marketing context" was found to be the most important of five main criteria, followed by integration of industrial links and resources and the internal structure of teams. The arrangement of the factory in space is secondary. Subject evaluation and choice findings indicated that, out of the five different schemes considered in this research, "tourist factory" was the most preferred option.

## References

- [1] Li, R. F., and Li, J. H., " Dilemma of Innovation or Dilemma of Organization?", Taking Kodak Digital Camera for Example. *Journal of Technology Management*, Vol. 2, No. 17, 2012, pp. 1-30.
- [2] Introducing Industrial Tourism to a Dormant Industrial Area: A Feasibility Study by Y. J. Chen (Master's Thesis)[2]. National Chengchi University's Graduate Institute of Land Economics, 2005.
- [3] Currently, Taiwan is the world's largest producer and exporter of tea leaves, according to a 2003 report titled "Current Status of Tea Leaf Production and Marketing in Taiwan: Implications for Quality Management and the Future" by M. L. Lin.
- [4] [4]The Ministry of Economic Affairs and the Industrial Development Bureau are offering free tours of their tourism factory. Date of access: July 21st, 2014 Article printed in 2012; online at <http://www.taiwanplace21.org/>.
- [5] Executive Yuan, Six Key Emerging Industries, Website [5]. Updated: 15 July 2014 Originally posted at:
- [6] Accessed December 8, 2014, from [http://www.ey.gov.tw/Default.html?t=672BCA8C\\_D93FB3D032DF1378F0D963F8](http://www.ey.gov.tw/Default.html?t=672BCA8C_D93FB3D032DF1378F0D963F8).
- [7] Master's thesis by Li, J. N., titled "A Study on the Key Factors to the Successful Operation of a Tourism and Leisure Tea Garden." School of Business Administration Graduate Program, National Changhua University of Education.
- [8] To wit: "Moriguchi H. Exploration of the Future of Small and Medium Enterprises - Examples of Successful Corporate Transformation," Taipei: Hwatai Publishing, 2000, Tu, S. K., trans. and ed.
- [9] Bruce Roberson, Nitin Nohria, and Joyce William
- [10] What Works: The 4-Step Plan for Building a Thriving Company, United States of America: McKinsey & Company, Inc.; William F. Joyce; Nitin Nohria; 2003.
- [11] Delphi: a flexible approach to qualitative research. [9] Murry, J. W., & Hammons, J. O. Pages 423-436 in 2012's