

## **Analyzing the Spatial and Diversification Patterns of Cottage Industry in Myeik: Towards Future Development and Sustainability**

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### **Abstract**

This paper, titled "Analyzing the Spatial and Diversification Patterns of Cottage Industry in Myeik," aims to explore avenues for the future development of cottage industries in Myeik. The objectives include studying the significance of cottage industries within the study area, examining the diverse types of cottage industries, analyzing the correlation between cottage industries and supporting factors, investigating the spatial distribution patterns of cottage industries in Myeik, and assessing the socio-economic conditions of the study area. Primary data for this research is gathered through questionnaire surveys, and open interviews during field observations, and secondary data is obtained from relevant administrative offices, providing population data, household information, and details on the types of cottage industries. The application of geographical information systems (GIS) is employed for data analysis, including statistical methods applied to tables and figures. The findings reveal that within Myeik proper, 12 wards exhibit high diversification of groups, with a predominant concentration of cottage industries. This prevalence is attributed to the increased convenience of transportation and the rapid progression of imported goods. Zaydan Ward stands out with the highest diversification index of + 0.78, owing to its strategic proximity to Seiknge Bazaar and the port, making it an advantageous location for distributing cottage industry products. Yaybone Ward follows with the second-highest diversification index of +0.77, as it is situated near Myeik University. Kangyi Ward demonstrates a medium diversification index of + 0.46, while Talaisu Ward registers a low diversification index. This research contributes valuable insights that can be applied to address local needs and foster future sustainable development within the study area.

**Keywords:** cottage industry, diversification index, distribution patterns of cottage industry

### **Introduction**

In developed countries, small businesses and cottage industries contribute almost 80% to economic activities (Aslam, 2013), and SMEs globally contribute between 60% and 90% (Abe et al., 2012). Given these statistics, it is evident that cottage industries and small businesses significantly impact the economic development of any country. Cottage industries also confer a comparative advantage, as witnessed in the cases of India, China, and Bangladesh. The integration of cottage industries fosters self-employment and generates employment opportunities, creating a multiplier effect on overall economic growth. Cottage industries and small businesses act as catalysts for economic activities, adding tangible value to a country's resources. This value creation leads to income generation, ultimately resulting in savings and expenditures, which stimulate investments, initiating a cyclical economic process. Thus, it is accurate to assert that small businesses and cottage industries play a vital role in a country's economic development. Scholars like Ghalib, Malki, and Imai (2011) underscore the pivotal role of entrepreneurial activities, particularly at the micro level, in fostering economic development. They contend that such activities are crucial for developing economies, serving as a means of self-achievement in terms of income generation and contributing to the country's economy (D' Este et al., 2012). Cottage industries, characterized by small-scale production using family or a limited number of labours, primarily local raw materials, and modest capital, offer advantages such as time and cost savings in transportation. They provide opportunities for local labor employment, access to domestic raw materials, and affordable commodities, contributing to regional income through exports. Myeik, situated in the Tanintharyi region of southern Myanmar, is a significant seaport city on the delta of the Tanintharyi River. With 12 wards and a

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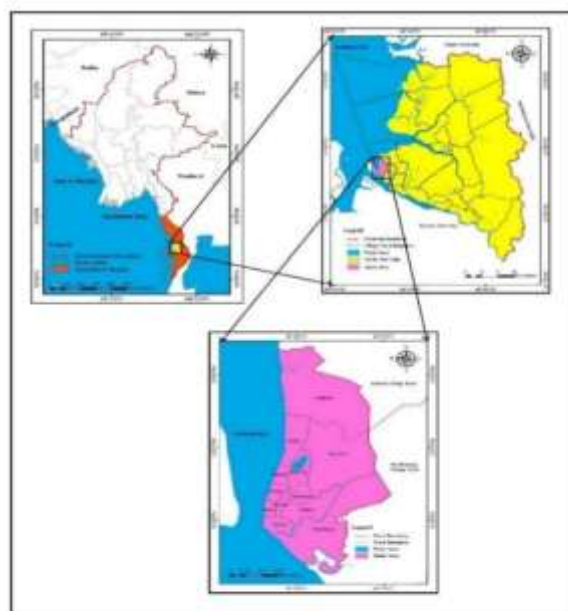
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population of 107,405 in 2019, the town heavily relies on waterways for transportation. Over the past few decades, the authorities' emphasis on road development has influenced both cottage industries and urban development in Myeik. The economic policy shift to an open-market orientation in 1988 by the state government further propelled commercial, regional, and urban development, fostering socio-economic progress in Myeik. As of 2019, Myeik boasts 596 cottage industries encompassing 39 industrial types, including food-stuff, textiles, construction, household, personal goods, machinery, repairing, and other industries.

### Study Area

The research site, Myeik, functions as the administrative hub of Myeik Township in the Tanintharyi Region. Geographically, it is situated between the north latitudes of 12° 25' 25"N and 12° 28' 27"N and the east longitudes of 98° 35' 30"E and 98° 37' 05"E, covering an area of 9.02 square kilometers (equivalent to 2228.9 acres). The town comprises 12 wards and has a population of 107,405 individuals as of the year 2019. (Figure 1).



**Figure 1.** Location of Myeik

### Aim and Objectives

The primary objective of this study is to study the spatial distribution of cottage industry in Myeik. The specific objectives are outlined as follows:

- To observe the existing cottage industry in Myeik
- To investigate the spatial distribution pattern of cottage industry
- To assess the degree of diversification levels of the cottage industry in Myeik

### Data and Methods

This research incorporates both primary data acquired through field surveys and personal interviews (by taking photos), along with secondary data sourced from relevant offices, books, and papers. The collected data undergo thorough examination and assessment utilizing computer-based techniques, GIS mapping, and pertinent statistical methods. To analyze the spatial distribution of cottage industries in Myeik, GIS techniques are applied for the creation of maps and graphs, alongside calculations for the levels of diversification index.

### Discussion and Results

#### Types of Cottage Industries in Myeik

Cottage industries usually refer to industrial works that operate with little capital family or part-time labour and not highly cost machines. In Myeik works such as Thatch work, Coconut fiber rope, Wood Tray, Dynamo work, and Crab Network are found in a fair number. Other major industrial works are related to food processing and the remaining industrial works are

concerned with personal and household goods, construction materials, paper and presses, machinery, and other works. There is the total of 596 cottage industrial works in various wards of Myeik and they are classed into the following industrial main types, sub-types, and numbers of cottage industry in Myeik, (Tables 1, 2 &3, and Figure 2).

**Table 1. Types of Cottage Industrial Types in Myeik**

No.	Main Type	Sub-type of cottage industry
1	Food-Stuff	Snack and Bakeries, Betel Nut Work, Purified Water and Ice Factory, Ice-cream Work, Grinder, Dried Fish Work, Rice Noodle Work, Spices Work, Cheroot Work, Bean Sauce, Cashew Nut Work, Betel Lime Work
2	Textiles	Tailor, Dying and Printing Work, Cushion
3	Construction and Households	Aluminium Work, Steel and Iron Scrolling, Concrete Work, Thatch Work
4	Personal Goods Industries	Furniture, Coconut Fiber Rope, Religions Material Work, Plastic Board Work, Sweeper, Candle, Wood Tray, Thanakkhar
5	Machinery and Repairing	Cycle Repairing, Workshop, Car and Cycle Washing, Dynamo Work, Lathe Machine, Blacksmith, Casting and Smelting, Fuse and nozzle Work
6	Others	Goldsmith, Crab Net Work, Invitation Card Work, Tin Work

Source: Field Survey

Based on the available data, Myeik hosts a total of 596 establishments encompassing 39 distinct types of cottage industries. For ease of classification, these industries are aggregated into six main categories: food-stuff industries, textiles industries, construction and household industries, personal goods industries, machinery and repairing industries, and other miscellaneous industries.

**Tables 2. Number of Cottage Industries in Wards of Myeik**

No.	Types wards	Food Stuff Industries	Textiles Industries	Construction and Households Industries	Personal goods Industries	Machinery and Repairing Industries	Other Cottage Industries	Total
1	Myeiktaung	29	55	13	32	98	14	241
2	Alekyun	7	14	16	1	28	2	68
3	Kanphyar	16	11	12	2	31	1	73
4	Yaybone	10	15	7	10	24	1	67
5	Kangyi	3	-	1	1	15	1	21
6	Myitnge	5	5	1	2	11	4	28
7	Naukle	4	8	4	6	23	-	45
8	Talaisu	-	-	-	-	-	1	1

No.	Types wards	Food Stuff Industries	Textiles Industries	Construction and Households Industries	Personal goods Industries	Machinery and Repairing Industries	Other Cottage Industries	Total
9	Zaydan	4	4	1	1	3	1	14
10	Kankhaung	8	5	1	2	2	1	19
11	Seiknge	2	1	3	1	1	-	8
12	Dawaisu	4	3	1	-	2	1	11
	Total	92	121	60	58	238	27	596

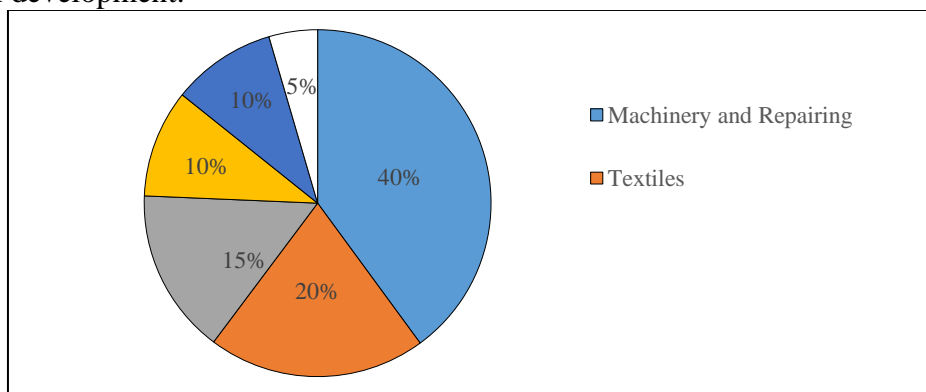
Source; Based on Field Survey Data (January to February 2020)

**Table 3. Number of the Main Types of Cottage Industry**

No.	Types	Number	Percentage
1	Machinery and repairing	238	40
2	Textiles	121	20
3	Food-Stuff	92	15
4	Construction and Households	60	10
5	Personal Goods	58	10
6	Others	27	5
Total		596	100

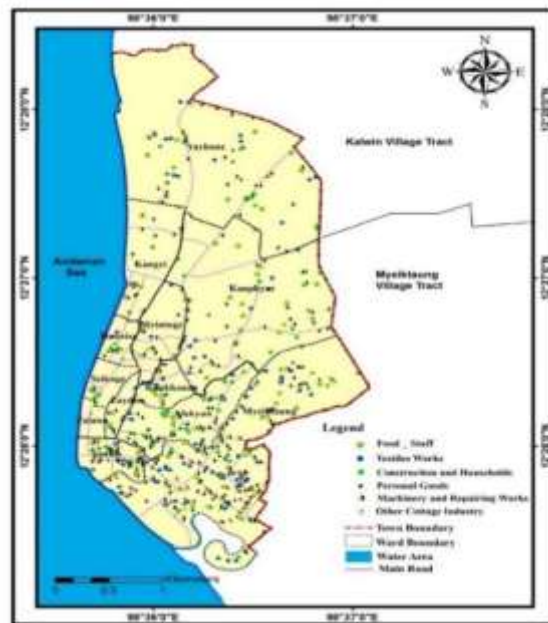
Source: Based on Field Survey Data (January to February 2020)

Figure 3 illustrates the spatial distribution patterns of the cottage industry in Myeik. Cottage industry products are primarily acquired by local consumers, prompting the strategic placement of these industries in areas with convenient access to their customer base. Additionally, due to their reliance on local raw materials, these industries are situated in areas where such resources are readily available in abundance. The observed distribution patterns can serve as valuable insights for the establishment and effective management of cottage industries, contributing to their overall development.



**Figure 2. Percentage Distribution of Cottage Industries in Myeik (2020)**

Source: Based on Table 3



**Figure 3.** Spatial Distribution of Cottage Industries in Myeik  
Source: Table 3

### Analysis of Diversification Patterns of Cottage Industries

The spatial distributions of cottage industries in Myeik exhibit variability based on their respective locations. Additionally, there is a discernible growth in both the types and quantity of cottage industries, aligning with the expanding population of Myeik. To further assess the significance of the spatial distribution of cottage industries, it is crucial to examine how these industrial works are situated throughout Myeik whether they are concentrated in specific areas or distributed diversely across the entire town. Analyzing diversification in cropping patterns draws inspiration from Bhatia's (1965) Index of Crop Diversification, while the Gibbs-Martin Index of Diversification (1962) is another valuable method for assessing diversification in cropping patterns within a given area. These methods, traditionally applied to analyze diversification indices in agricultural contexts, are employed in this paper to ascertain the intensity of the distribution pattern of cottage industries. The Gibbs-Martin index of diversification is computed using the following formula.

$$\text{Index of Diversification} = 1 - \frac{\sum x^2}{(\sum x)^2}$$

When denoted as X, it represents the percentage of the total number of cottage industries occupied by each specific cottage industry. If an entire region's total area is exclusively dedicated to a single type of cottage industry, the index value is zero. Conversely, if the distribution is uniform among all cottage industries, the index value approaches 0.9. Hence, the diversification index ranges from 0.0 to 0.9. The calculation of the cottage industry diversification index for Myeik is determined as follows.

$$\begin{aligned} \text{Diversification Index} &= 1 - \frac{\sum x^2}{(\sum x)^2} \\ &= 1 - \frac{76516}{(596)^2} \\ &= 1 - 0.215 \\ &= + 0.78 \end{aligned}$$

As a result, the diversification index for cottage industries in Myeik is notably high. The calculation of the cottage industry diversification index was performed for each ward in Myeik proper, as outlined in Table 4. The resulting index values are detailed in Table 4. The mean value

of the cottage industry diversification index is computed as 0.65, with a corresponding standard deviation of 0.2.

According to Table 5, in Myeik proper, there are 12 wards situated in areas characterized by high diversification of groups, where the majority of cottage industries operate. This concentration is attributed to the increased convenience of transportation and the rapid progress in imported affairs. Zaydan Ward stands out with the highest diversification index of 0.78, positioned in proximity to Seiknge Bazaar and the port, rendering it conducive for distributing cottage industry products. Following closely is Yaybone Ward with the second-highest diversification index of 0.77, strategically located near Myeik University. Kangyi Ward exhibits a moderate diversification index of 0.46. In contrast, Talaisu and registers a low diversification index.

The largest number of cottage industries is observed in machinery and repairing works, totaling 238 establishments, followed by 121 works in textiles industries and 92 works in food-stuff industries. Conversely, other types of industries have the lowest count, with only 27 establishments, trailed by 60 in construction and household industries and 58 in personal goods industries. Cycle repairing works dominate among various works, boasting 117 establishments and being widespread across all wards. Tailoring works, the second-largest category in Myeik, are predominantly concentrated in Myeiktaung Ward. Cottage industries offer significant advantages to the local population due to their low capital requirements, utilization of local and readily available raw materials, and easy access to local markets, resulting in cost savings on transportation.

**Table 4. The levels of diversification index**

Degree of Diversification	Index of Diversification
High Diversification	>0.7
Medium Diversification	between 0.3 and 0.6
Low Diversification	<0.2

**Table 5. Spatial Distribution and Diversification of Cottage Industries in Myeik (2020)**

No.	Types wards	Food Stuff Industries	Textiles Industries	Construction and Households Industries	Personal goods Industries	Machinery and Repairing Industries	Other Cottage Industries	Total ΣX	Total2 (ΣX) <sup>2</sup>	Diversification index	Index value
1	Myeiktau	29	55	13	32	98	14	241	58081	0.74	H
2	Alekyun	7	14	16	1	28	2	68	4624	0.72	H
3	Kanphya	16	11	12	2	31	1	73	5329	0.72	H
4	Yaybone	10	15	7	10	24	1	67	4489	0.77	H
5	Kangyi	3	-	1	1	15	1	21	441	0.46	M
6	Myitnge	5	5	1	2	11	4	28	784	0.76	H
7	Naukle	4	8	4	6	23	-	45	2025	0.67	H
8	Talaisu	-	-	-	-	-	1	1	1	0.00	L
9	Zaydan	4	4	1	1	3	1	14	196	0.78	H
10	Kankhau	8	5	1	2	2	1	19	361	0.73	H
11	Seiknge	2	1	3	1	1	-	8	64	0.75	H
12	Daweisu	4	3	1	-	2	1	11	121	0.74	H
	Total	92	121	60	58	238	27	596	76516		

Source: Field Survey

The development of cottage industries in Myeik is notably influenced by shifts in state policy, transitioning from a centrally planned economy to an open-market-oriented system, coupled with the implementation of regional and urban development planning. Consequently, the populace engages in economic activities relying on local raw materials and markets, facilitating the export of cottage industry products to other regions and neighboring areas. Despite the socio-economic and regional development facilitated by cottage industries, it is observed that the incomes derived from these works are generally modest. In reality, cottage industries primarily provide opportunities for family-based employment and incomes, with annual earnings not significantly surpassing those of daily wage laborers. The collaborative efforts of the people and the state government contribute to the socio-economic and regional development fostered by these cottage industries.

### Conclusion

The data reveals a total of 596 cottage industries in Myeik, distributed across 92 food-stuff industries, 121 textiles industries, 60 construction and household industries, 58 personal goods industries, 238 machinery and repairing industries, and 27 other industries. When examining the number of industrial works in each ward, Myeiktaung leads with 241, followed by Kanphyar with 73, Alekyun with 68, and Yaybone with 67 industries. The lowest numbers of industrial works are found in Talaisu, Seiknge, Daweisu, Zaydan, with 1, 8, 11, and 14 industries, respectively.

The spatial distribution of cottage industries, assessed through the Gibbs and Martin diversification index, indicates high diversity across all industries and wards. The even distribution of industrial works throughout various parts of the town contributes to the observed high diversification indices. Diverse types of cottage industries operate across various wards to directly benefit the populace. Out of the 596 cottage industries, a significant number of establishments are engaged in machinery and repairing, as well as textiles industries, both of which play crucial roles in Myeik. Machinery and repairing services are integral to the community, while textile works cater directly to consumers, resulting in their equitable distribution across all wards of Myeik. Concerning the remaining industries, food processing works are strategically located in easily accessible wards to facilitate the distribution of products to consumers in different parts of Myeik and its adjacent areas.

To enhance the socio-economic conditions of the populace and provide additional income from other regions, it is imperative to create job opportunities. Consequently, industries such as food processing, textiles, and personal goods should receive essential financial and technological support, along with access to new market information. The diversification index of cottage industries underscores the necessity for individuals to engage in various types of industries for their daily sustenance. The limited consumptive power of the local population precludes specialization in one or a few types of industrial works. Modifying this situation has the potential to advance the socio-economic conditions in Myeik.

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