

Geographical Analysis of Retail Shops in Chanayethasan Township

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Abstract

Retailing includes all the activities involved in selling goods or services directly to final consumers for their personal, and / or non-business use. Although many retail stores are independently owned, an increasing number are now banding together under some form of corporate or contractual organization. Retail shops play an important function in supplying and distribution of goods. This paper focuses on spatial distribution pattern of retail shops within Chanayethasan Township. The study uses the location quotient method to analyze the distribution of retail shops. In this method, it will be computed according to Dr. Bhatia's Location Quotient Method for the concentration of retail shops in the study area. After computing the concentration, three different grades such as high, medium and low concentration level will be analyzed using mean and standard deviation. The required relevant data and figures are obtained from Mandalay Directory and official documents and directive of Mandalay City Development Committee concerning with the retail shops in Chanayethasan Township. This paper tries to answer following two research questions. (1) How do retail shops distribute in Chanayethasan Township? (2) What are the major forces that cause the increase of retail shops in Chanayethasan Township?

Key words: Retail shops, location quotient, Chanayethasan Township

Introduction

The research entitled "**Geographical Analysis of Retail Shops in Chanayethasan Township**" is presented from geographical point of view. To explain some specific terms: store means shop, or large shop selling some specified goods, something in wholesale system but more often in

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retail. Not every shop is a store although a store sells goods just like a shop. (Webster's New World Dictionary "Store"). Retailing in this paper referred as "business activity of selling goods and services directly to consumers. Instead of selling products for resale, a retailer sells goods or services to individuals making purchases for themselves or for their families" (Encarta Reference Library, 2004). Therefore, the research presented here number of stores collected from Mandalay Directory (2010) and the number of stores which are registered by Sanitation Department, Mandalay City Development Committee. Thus, retail shops in this paper refer to stores from this department and Mandalay Directory.

This research will examine and analyze the concentration of retail shops in the study area. In studying the distribution of stores in Chanayethasan Township, there were (390) stores in its (20) wards. The largest number was found in East Aungnanyeiktha Ward in which there were (54) stores. The density of stores in Chanayethasan Township can be assessed with location quotient method. In doing so, the pattern of concentration can be clearly analyzed. The research presented here aims to bring about new ideas and topics of discussion within retail geography and other related fields of investigation and further study of temporal changes in retail shops.

Aim and Objectives

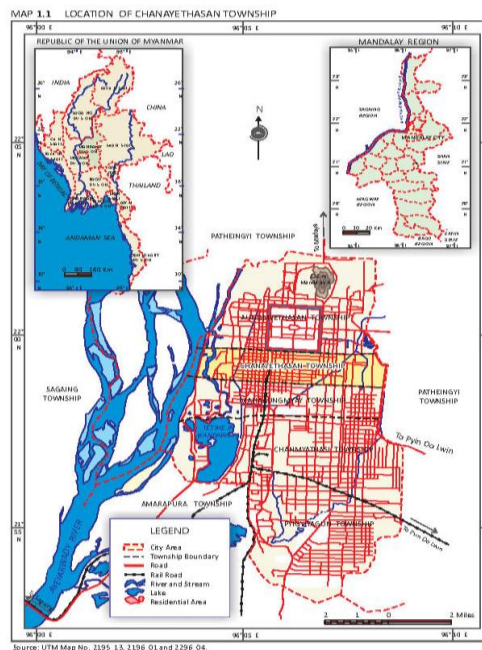
The main aim of the research paper is to analyze the spatial distribution pattern on present conditions of retail shops in Chanayethasan Township. To fulfill the above aim, the main objectives of the study are;

- To study the geographic aspect of the study area that influences the location of stores,
- To examine the demographic aspect of the study area this relates to the number of stores,
- To examine the major forces that causes the increase of stores, and
- To analyze the concentration of stores (retail shops) in the study area

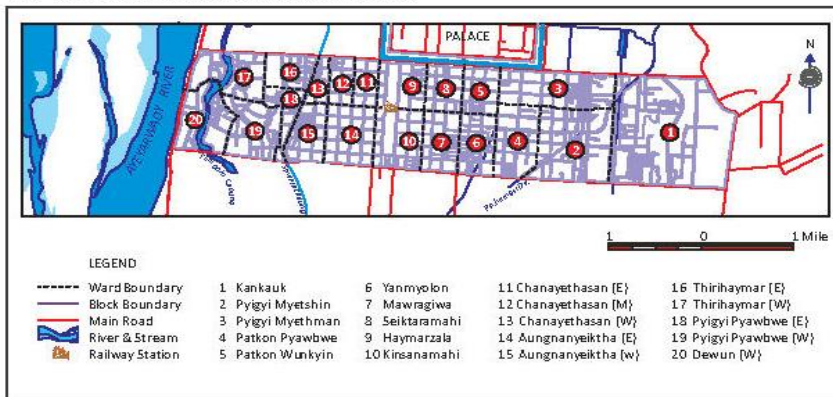
The Study Area

The study area is Chanayethasan Township; it is the smallest township out of five townships within Mandalay City. It lies between the Latitudes $21^{\circ} 57' 56''$ and $21^{\circ} 59'$ North and Longitudes $96^{\circ} 03' 30''$ and $96^{\circ} 08' 03''$ East. (Map 1.1). It has an area of 5.05 square miles or 3,234 acres, which is equal to 12.2 percent of total city area. There are twenty administrative wards. It had a total population of (139,024) in 2010. Retail geography is the study of where to place retail shops based on where their customers are. It is located at the central portion of Mandalay City, and it is one of the most developed and urbanized township in Mandalay City, and then the Central Business Area is included within this township. Most of the retail shops (stores) are found in this township. Chanayethasan Township consists of twenty wards. (Map 1.2 and Table 1.1). Chanayethasan Township is generally wider in east-west direction and narrow in north-south direction, it has an elongated rectangular shape.

As the research paper was already started since the year of 2010, at that time the city was composed of (5) townships. Just on 9 March, 2011, the Mandalay City Development Committee had announced that the City Area will be expanded by occupying the all of Amarapura Township. Moreover, the necessary data were already collected before that announcement. Hence, only (5) townships of Mandalay City will be considered and focused throughout this research paper.



MAP 1.2 WARDS OF CHANAYETHASAN TOWNSHIP



Source: Mandalay City Development Committee.

Table (1.1) Total Area of Wards in Chanayethasan Township

| Sr. No | Wards | Area (Acres) | Area (sq. miles) |
|--------|--------------------|---------------|------------------|
| 1 | Kankauk | 633.02 | 0.99 |
| 2 | Pyigyimyethshin | 378.35 | 0.59 |
| 3 | Pyigyimyethman | 207.94 | 0.32 |
| 4 | Patkonpyawbwe | 194.36 | 0.30 |
| 5 | Yanmyolon | 123.6 | 0.19 |
| 6 | Patkonwunkyin | 99.56 | 0.16 |
| 7 | Seittaramahi | 111.65 | 0.17 |
| 8 | Mawragiwa | 133.61 | 0.21 |
| 9 | Kinsanamahi | 179.39 | 0.28 |
| 10 | Haymarzala | 135.22 | 0.21 |
| 11 | Chanayethasan (E) | 71.78 | 0.11 |
| 12 | Chanayethasan (M) | 71.73 | 0.11 |
| 13 | Chanayethasan (W) | 56.84 | 0.09 |
| 14 | Aungnanyeiktha (E) | 176.37 | 0.28 |
| 15 | Aungnanyeiktha (W) | 103.41 | 0.16 |

| | | | |
|----|-------------------|----------------|-------------|
| 16 | Thirihaymar (E) | 97.46 | 0.15 |
| 17 | Thirihaymar (W) | 112.48 | 0.18 |
| 18 | Pyigyipyawbwe (E) | 69.83 | 0.11 |
| 19 | Pyigyipyawbwe (W) | 147.11 | 0.23 |
| 20 | Dewun (W) | 130.29 | 0.20 |
| | Total | 3234.00 | 5.05 |

Source: Settlement and Land Records Department, Mandalay District

Data and Methodology

Secondary sources of data obtained from various departments namely: Township General Administrative Department, Settlement and Land Records Department, Mandalay District, Meteorology and Hydrology Department, Mandalay Region, Mandalay City Development Committee, National Planning Department, Mandalay District, Township Immigration and National Registration Department and Mandalay Directory (2010). Graphically methods will be illustrated and compared data for easily insights. As field observation, several stores by types are investigated during 2011 to 2012.

Initially it is needed to take the total number of retail shops of each ward and total number of stores in Chanayethasan Township by comparing with the total stores of Mandalay City. Then, it will be computed according to Dr. Bhatia's Location Quotient Method for the concentration of retail shops. After computing the concentration of stores, three different grades such as high, medium and low concentration levels will be analyzed using mean and standard deviation.

Demographic Factors

Socio-economic condition is an important factor for the development, urban growth and urban function development and location of retail shops. Therefore, it is essential to study the population of Chanayethasan Township. Chanayethasan Township is a part of the urban area of Mandalay City and it is a relatively dense populated area among

other townships of Mandalay. Total Population by ward-wise in Chanayethasan Township (2010) has shown in Figure (1.1). According to 2010 data, the whole township's population density was 27,512 persons per square mile. The population distribution of Chanayethasan Township is uneven. Therefore, the distribution of population among wards is divided into four groups as follow:

1. Wards with more than 15,000 people, (Pyigyipyawbwe (W))
2. Wards with between 10,000 and 15,000 people, (Kankauk ward)
3. Wards with between 5,000 and 10,000 people, (Aungnanyektha (E), Aungnanyektha (W), Thirihaymar (W), Chanayethasan (E), hanayethasan (M), Pyigyimyeshin, Pyigyimyethman, Dewun (W), Haymarzala, Yanmyolon, Mawragiwa, Kinsanamahi and Seittaramahi and
4. Wards with less than 5,000 people. Pyigyipyawbwe (E), Patkonpyawbwe, Thirihaymar (E), Patkonwunkyin, and Chanayethasan (W).

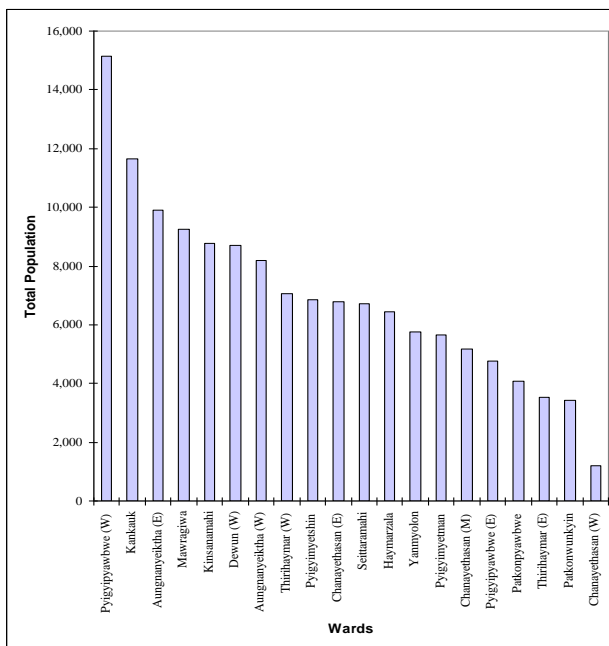


Figure (1.1): Total Population by Ward-wise in Chanayethasan Township (2010)

Distribution of Retail Shops (Stores)

The total number of retail shops had been increasing within the last fifty years. The spatial distribution of retail shops is found to be concentrated around the center of the city. The wards with most densely populated are located in the study area. There are two main factors for the increase as well as move of retail shops. One factor is urban expansion associated with increasing population. A second factor is an increasing number of several enterprises (government and private) and institutions take place in Mandalay City. With an increase of urban population, number of grocery shops, servicing, and food and drink shops also increased.

The ward with highest number of store in the study area was the Aungnyeyiktha (E). It had **54** stores which amounted 13.85 % of total number in Chanayethasan Township during study period.

The ward of Kinsanamahi, which had **40** stores (10.26 %). The wards of Patkonpyawbwe and Chanayethasan (E), which had **30** stores in each (7.69 %). The wards of Haymarzala and Chanayethasan (M) had **27** in each (6.92 %). The ward of Mawragiwa had **24** stores (6.15 %). The ward of Seittaramahi had **23** stores (5.90 %). The ward of Patkonwunkeyin had **21** stores (5.38 %). The wards of Pyigyimyetshin and Yanmyolon which had **19** stores in each (4.87 %). The ward of Pyigyipyawbwe (W) had **16** stores (4.10%). The ward of Aungnyeyiktha (W), which had **14** stores (3.59 %). The ward of Chanayethasan (W), had **10** stores (2.56%). The wards of Pyigyimyetman and Thirihaymar (W) had **9** stores each ward (2.31 %). The ward of Pyigyipyawbwe (E), which had **7** stores (1.79 %). The wards of Kankauk and Thirihaymar (E) which had **4** stores in each (1.03 %). The ward of Dewun (W) had **3** stores (0.77 %). The numbers of stores found in 2010 are plotted in Map (1.3).

MAP 1.3 LOCATION OF RETAIL SHOPS (STORES) IN CHANAYETHASAN TOWNSHIP (2010)



Source: Based on Field Survey Data conducted in 2010.

Data Analysis

Ground Study on Distribution Patterns of Retail Shops

In Chanayethasan Township, there are totally 6 markets which are Zegyo market, Kaingdan market, Yadanabon market, Mingalar market, Pyikyaw market, and U Poethawin bazaar (Akhon-lut-zei) which it is free in tax. Among Zegyo market is the main commercial place where goods of Upper and Lower Myanmar are exchanged. Yadanabon market is also a second largest and second important commercial centre of the Township. Zegyo and Yadanabon markets are the important markets which transacted commercially with the different regions in Myanmar. They are also wholesale and retail markets for the internal and external dealers of the markets. In present study, stores are excluded which are located within markets of Chanayethasan Township. Because these are located in same place. But, shopping malls and shopping centers are accounted as a store in this study. Shopping centers, or stores or shops which sell the consumer goods, household goods, electrical equipments and foodstuffs are widely found especially within the Central Business Area of the township.

According to field observation (within 2011-2012), such stores by different goods are as follows: Majority of stores are selling cosmetic, consumer goods, food stuffs, grocery and stationary. (e.g. *May Khin, AK, Haung Ta, Wai Shin, Bo Shal, Tein Pyar, Sein Maung, U Ba Than and Daw Tin Tin Hla* etc.,) Some stores distribute furniture from Thailand. (e.g. *Kyi Myanmar Tun, Kyu Kyu, Thein Ma Ma and Sein Myanmar* etc.,). Some stores are related to clocks and watches and electronic goods. (e.g. *Japan, Taiwan and San Yin* etc.,). Some of these are selling cosmetic, clothing and clothes, shoes, bags. (e.g. *Lashio Mini* etc.,). Some of stores are regarded with gift shops and fancy materials. (e.g. *Ginza, Happy, Sun Star*). Some of stores are related only cosmetic. (e.g. *Yee Shin, Kyi Pyar and Padamyar* etc.,). Some of retail shops are selling toy shops and child wares. (e.g. *Ngwe Yamin and Kyone Haw* etc.,)

There were 1,182 stores in Mandalay City during 2010. Chanayethasan Township as the first rank, which account for 32.99 % of the city's total. The least township was Pyigyitagun Township which accounted for 11.11 percent. (Table 1.2)

Table (1.2) Total Number of Stores in Mandalay City (2010)

| Sr.No. | Township | Total Stores | Percentage |
|--------|---------------|--------------|------------|
| 1 | Aungmyethasan | 207 | 17.51 |
| 2 | Chanayethasan | 390 | 32.99 |
| 3 | Mahaaungmye | 261 | 22.08 |
| 4 | Chanmyathasi | 194 | 16.41 |
| 5 | Pyigyitagun | 130 | 11.11 |
| | Mandalay City | 1,182 | 100 |

Source: Mandalay City Development Committee, National Planning Department, Mandalay District and Mandalay Directory (2010)

The spatial variations in the degree of store concentration are found to be the result of the differential interaction between various factors such as store location, number of population, near Central Business Area, accessibility and socio-economic conditions, etc. of an area. Concentration of stores in each ward is calculated by Dr. Bhatia's Location Quotient Method. In order to determine the concentration of store, an index (the location quotient) is used. Concentration of stores is described by the total number of stores in each ward in Chanayethasan Township. The concentration of wards in Chanayethasan Township is classified into three grades as high, medium and low. According to the Table (1.4), the concentration of store will be calculated by **Location Quotient Method**. (Map 1.4 and Table 1.3)

According to Dr. Bhatia's, **Location Quotient Method**

$$\text{Index for Determining Concentration of Store} = \frac{\text{Stores of each Ward in Chanayethasan Township}}{\text{Total Stores of Wards in Chanayethasan Township}} \div \frac{\text{Total Stores of Chanayethasan Township}}{\text{Total Stores of Mandalay City}}$$

According to the calculation of L.Q for stores concentration, the range of L.Q value is divided into 3 groups based on L.Q value, mean and standard deviation.

- (1) Wards with L.Q value more than 0.25 i.e. high concentration of store,
- (2) Wards with L.Q value between 0.05 and 0.25 i.e. medium concentration of store, and
- (3) Wards with L.Q value less than 0.05 i.e. low concentration of store.

(1) Wards with L.Q values more than 0.25 amounted to 2 wards. They are as follows according to descending order.

- | | |
|----------------------|----------------|
| a. Aungnanyektha (E) | b. Kinsanamahi |
|----------------------|----------------|

(2) Wards with L.Q values between 0.05 and 0.25 amounted to 15 wards. They are as follows according to descending order.

- | | |
|----------------------|-----------------------|
| a. Patkonpyawbwe | b. Chanayethasan (E) |
| c. Haymarzala | d. Chanayethasan (M) |
| e. Mawragiwa | f. Seittaramahi |
| g. Patkonwunkyin | h. Pyigyimyetshin |
| i. Yanmyolon | j. Pyigyipyawbwe (W) |
| k. Aungnanyektha (W) | l. Chanayethazsan (W) |
| m. Pyigyimyetman | n. Thirihaymar (W) |
| o. Pyigyipyawbwe (E) | |

(3) Wards with L.Q values less than 0.05 amounted to 3 wards.

- | | | |
|------------|--------------------|--------------|
| a. Kankauk | b. Thirihaymar (E) | c. Dewun (W) |
|------------|--------------------|--------------|

Table (1.3) Concentration of Stores by Wards in Chanayethasan Township (2010)

| Sr. No | Wards | Total Number of Stores | Wards / Township | Township /City | LQ Value | Concentration |
|--------|--------------------|------------------------|------------------|----------------|-------------|---------------|
| 1 | Kankauk | 4 | 0.01 | 0.33 | 0.03 | Low |
| 2 | Pyigyimyetshin | 19 | 0.05 | 0.33 | 0.15 | Medium |
| 3 | Pyigyimyetman | 9 | 0.02 | 0.33 | 0.07 | Medium |
| 4 | Patkonpyawbwe | 30 | 0.08 | 0.33 | 0.23 | Medium |
| 5 | Yanmyolon | 19 | 0.05 | 0.33 | 0.15 | Medium |
| 6 | Patkonwunkyin | 21 | 0.05 | 0.33 | 0.16 | Medium |
| 7 | Seittaramahi | 23 | 0.06 | 0.33 | 0.18 | Medium |
| 8 | Mawragiwa | 24 | 0.06 | 0.33 | 0.19 | Medium |
| 9 | Kinsanamahi | 40 | 0.10 | 0.33 | 0.31 | High |
| 10 | Haymarzala | 27 | 0.07 | 0.33 | 0.21 | Medium |
| 11 | Chanayethasan (E) | 30 | 0.08 | 0.33 | 0.23 | Medium |
| 12 | Chanayethasan (M) | 27 | 0.07 | 0.33 | 0.21 | Medium |
| 13 | Chanayethasan (W) | 10 | 0.03 | 0.33 | 0.08 | Medium |
| 14 | Aungnanyeiktha (E) | 54 | 0.14 | 0.33 | 0.42 | High |
| 15 | Aungnanyeiktha (W) | 14 | 0.04 | 0.33 | 0.11 | Medium |
| 16 | Thirihaymar (E) | 4 | 0.01 | 0.33 | 0.03 | Low |
| 17 | Thirihaymar (W) | 9 | 0.02 | 0.33 | 0.07 | Medium |
| 18 | Pyigyipyawbwe (E) | 7 | 0.02 | 0.33 | 0.05 | Medium |
| 19 | Pyigyipyawbwe (W) | 16 | 0.04 | 0.33 | 0.12 | Medium |
| 20 | Dewun (W) | 3 | 0.01 | 0.33 | 0.02 | Low |
| | Total | 390 | | Σ of X | 3.03 | |
| | | | | Mean | 0.15 | |
| | | | | δ | 0.1 | |

Source: Mandalay City Development Committee, Mandalay Directory (2010) & Immigration and National Registration Department, Mandalay District

MAP 1.4 CONCENTRATION OF RETAIL SHOPS IN CHANAYETHASAN TOWNSHIP (2010)



Source: Mandalay City Development Committee, Mandalay Directory (2010) & Immigration and National Registration Department, Mandalay District.

Results and Discussion

In 2010, the total numbers of stores were 390. Aungnanyeiktha (E) ward with the largest number of stores were 54 accounting for 13.8 percent of the total. There was an increase of 175 numbers in stores if 2010 was compared with 1999. Due to its accessible location, most customers are attracted. Most of the stores are located in Chanayethasan Township which is thickly populated. Majority of stores are concentrated in the Central Business Area of Chanayethasan Township in Mandalay City.

There may be very close relation between the distribution of population and that of stores. Generally there is more purchasing power along with the increasing number of population. The wards of Dewun (W), Kankauk, Thirihaymar (E), Pyigyipyawbwe (E), Pyigyimyetman and Thirihaymar (W) had comparatively larger number of total population with number of store. Majority of stores are related to cosmetic, consumer goods, food stuffs, grocery and stationary.

There were 1,182 stores in Mandalay City in 2010. Chanayethasan Township ranked as first with total number of stores which accounted for 32.99 percent of the city's total.

According to the calculation of L.Q for stores concentration, the range of L.Q value is divided into 3 groups based on L.Q value, mean and standard deviation.

(1) 2 Wards with L.Q value more than 0.25 i.e. high concentration of store,

- (2) 15 Wards with L.Q value between 0.05 and 0.25 i.e. medium concentration of store, and
- (3) 3 Wards with L.Q value less than 0.05 i.e. low concentration of store.

According to the levels of spatial concentration of the stores in 2010, there were two wards of high concentration, 3 of low level and the remaining were under medium level. It can be clearly seen that the number of existing stores is related to the density of population in each ward. For example, in the wards of Kankauk, Thirihaymar (E) and Dewun (W) had low or very low or medium level of population density. Their respective concentration levels of number of stores were also found as low level. Whereas, medium density of population were also observed in Kinsanamahi and Aungnanyeiktha (E) wards, the concentration of store were very high in number. It may be due to the high income level of inhabitants in those wards rather than that of the others. In the remaining wards, both levels of population density and store concentration are also difficult to identify. Hence, it can be assumed that the wards, which have the large area with lesser households, might have been occupied by less number of stores and vice-versa. Such high concentration level of stores was found as two patches of Aungnanyeiktha (E) and Kinsanamahi wards where there were cluster of households.

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REFERENCES

- Aye Aye Tun, Dr. & Thida Aye, Daw (2008): "**A Study of Housing Types in Chanayethazan Township, Mandalay Division**" Project Paper, University of Distance Education, Mandalay.
- BRIAN J. L. BERRY & MARBLE, D.F. (1968): "*Spatial Analysis*": "**A Reader in Statistical Geography**" Prentice-Hall. INC Englewood Cliffs, New Jersey
- McINTYRE, W.E. (1955): "**The Retail Pattern of Manila**"
- Myaing Myaing Aye, Ma (2000): "**Spatial Analysis of Stores in Chanayethazan Township.**" Project Paper, submitted to the Department of Geography, University of Mandalay.
- S.Gregory (1980): *Statistical Methods and the geographer* 4th Edi, Longman Inc., London