HOTSPOT ANALYSIS ON MARKETING ASSESSMENT OF MOBILE PHONE SHOPS WITHIN DAGON MYOTIT (NORHT)

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ABSTRACT: Today, Mobile communication in Myanmar is a potentially life-changing prospect for the country, one of the developing countries in Southeast Asia. A quarter of its population is estimated to live in poverty. There is much potential for mobile phones to play a role in socioeconomic development, be it through access to services such as mobile money, or simply the access to information a mobile phone provides. It is estimated that 90% of wards and villages in the country already have a mobile signal. The Ministry of Posts and Telecom (MPT) began offering mobile services in 2013. In January 2014, Oreedoo and Telenor were granted licenses to provide mobile services, with commitments to provide 85% voice coverage within five years. It is expected these new networks will first cover the densely populated urban centers and gradually move outwards to rural areas, which do not currently have coverage. In this project, North Dagon Township, a relatively more developed area among the new satellite towns founded in 1989, was chosen to analyze the distribution of mobile shops using with GIS software. The ground survey for data collection took 3 days by 6 persons on main road and sub-road within the study township, on 31st December, 1st and 10th January, 2019 respectively. The rest of data is getting from MIMU. Systematic sampling method was used to identify the sampling locations. The primary data are divided into 3 three groups based on established year of mobile shops (2010-2012, 2013-2015, and 2016-2018) in order to identify the distribution of mobile shops an fluctuation of establish mobile shops within the periods by using Hotspot Analysis under Spatial Analysis Tools. In which, mobile phone shop are mostly cluster on the only two main road of Pinlong and Bomuba Htoo Road. For analyzing the attitude of mobile future, selling rate and mostly selling month, and ownership, which are important facts for establish mobile shops, it was used the primary field survey data by using SPSS software. The result shows that October is the highest selling rate month, personal ownership could be seen, the facts of location and main road are the main reason and important facts for establishing shops, and the attitude of mobile shops will be good trend in future. Finally, this paper will be useful in next research for implementing mobile industry within Dagon Myothit (North Dagon) Township.

I.   INTRODUCTION

The recent introduction of mobile communication in Myanmar is a potentially life-changing prospect for the country, one of the poorest in Southeast Asia. It is estimated that a quarter of its population is living in poverty. There is much potential for mobile phones to play a role in socioeconomic development, be it through access to services such as mobile money, or simply the access to information a mobile phone provides. It is estimated that 90% of wards and villages in the country already have a mobile signal. *(Report of a joint GSMA Connected Women-LIRNE ASIA study on Mobile phones, internet, and gender in Myanmar)*

Myanmar has seen a tremendous growth of the mobile phone market both in terms of penetration rate and widespread usage.

Mobile Phone is an electronic device used for communication and messaging. Nowadays, mobile phones are becoming a trendy and daily essential gadget of modern people. Mobile market is becoming competitive and different models of mobile phones are available at various price level. Therefore, sale and service showrooms of mobile phones are highly demanded. As the era is becoming Information and Communication Technology era, mobile phones have got a prospective market. Mobile phones have a good marked prospect all over the country. *(2010-2011, Project Profile on Mobile Phone Repairing and Servicing)*

Our group No(12) from the Batch-7 of Post Graduate Diplomatic course in Geographic Information System choose Dagon Myothit (North) Township as the study area because it is widely populated with extended quarters, village tracts and various land use areas. We can obtain the upgraded information about the demand and market trend of mobile phones by observing the mobile market of Dagon Myothit (North) area.

Aim and Objectives

The overall aim of the study is to assess the mobile shop industry marketing within Dagon Myothit (North) Township by Using GIS and SPSS software.
It is setting up with the following specific objectives in order to achieve the aim.
(a) To study the distribution and clustering of mobile phone Shops in Dagon Myothit (North) township.
(b) To observe the fluctuation of establishing mobile phone shops within a range of 2010 to 2018.
(c) To assess the selling rate in the present and the potential usage of mobile phones in the future.

Study Area

The study area is in Dagon Myothit (North) Township (16.8839 N and 96.1898 E) which is located in the eastern part of Yangon, Myanmar. The township comprises 27 wards, and shares borders with East Dagon Township in the north and east, South Okkalapa Township in the west, and South Dagon Township in the south. North Dagon is a relatively more developed area among the new satellite towns founded in 1989 by the military government. The reason why selecting the area was that it is one of the populated townships so a lot of mobile shops can be seen in this township. In this project, we will study the distribution of the mobile shops.
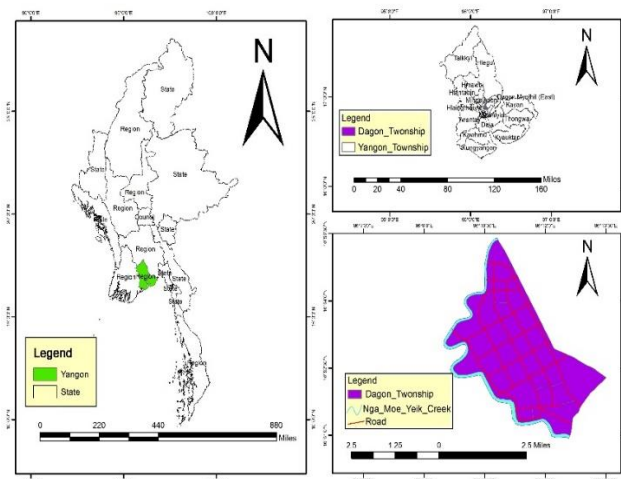

Figure (1.1): Location Map of Study Area

II.   DATA ACQUISITION

Data Collection Method

Two types of data are used; primary data and secondary data. Primary data are obtained by surveying across the township on 31st December, 2018 and 1st and 6th January, 2019. 34 Respondents are people from which located along four main roads of Dagon Myothit (North) Township: namely Pyi Htaung Su Main Road, Pin Long Main Road, General Ba Htoo Main Road and U Wi Sara Main Road. Even though it was did field observation on sub-Road and the street within study area by observation, it could not found the mobile shop industry. Surveying was done by interviewing with a questionnaire form that is mainly purposed to obtain the demand and prospects of mobile market. It was conducted by individual interviewing. The interview form is attaching in annex-1. GPS Essential, mobile phone software was used to mark the location points of mobile phone shops. Secondary data was obtained by acquiring from MIMU website, Google Earth Image and UTM Maps.

Data Analysis Method

Data processing of selling rate, fluctuation and future prospects of mobile shops was done by using IBM SPSS Statistics 25 software and distribution of mobile shops in Dagon Myothit (North) Township had shown on the map by using Arc Map 10.2.2, Google Earth Pro and Global mapper.

Table (2.1): Location of Mobile Phone Shop with Latitude and Longitude

Sr. No	Mobile Phone Shop Name	Latitude	Longitude	Establish Year	Ward
1	Nay Yee	16.89567	96.18641	2014	47
2	Ring Mobile	16.89639	96.18794	2018	46
3	AAA Mbile	16.89819	96.19147	2010	46
4	Digital Mart	16.88742	96.17107	2018	42
5	So Good Mobile	16.89278	96.1808	2016	48
6	Shwe Zee Kwet_3	16.89132	96.17803	2015	48
7	Nay Myo	16.89455	96.18731	2013	44
8	Mr. Phone	16.87034	96.19059	2013	35
9	Unitel_2	16.86999	96.19018	2016	35
10	Thamade	16.86975	96.18963	2016	35
11	Best One	16.86919	96.18946	2012	32
12	Samsung	16.86777	96.18592	2017	34
13	Shwe Zee Kwet	16.86703	96.18524	2014	32
14	Sky Moon	16.86773	96.18581	2010	34
15	884	16.86636	96.18309	2014	34
16	Unitel_1	16.86868	96.18749	2016	35
17	D Mart	16.86938	96.18891	2010	35
18	Mega Touch	16.8721	96.19513	2016	30
19	DG Mobile shop	16.87422	96.19922	2014	29
20	360 Mobile	16.87369	96.19731	2013	36
21	Boss Mobile	16.87328	96.19651	2018	36
22	Next Sale and services	16.8742	96.19829	2013	36
23	Myter Mobile	16.87594	96.20153	2010	37
24	Easy Talk Myanmar	16.87184	96.19367	2011	36
25	Bright	16.86385	96.19717	2014	31
26	Kyaw	16.89495	96.18705	2016	44
27	Daw Pu	16.87564	96.17287	2017	41-ext
28	Let Pan Wei	16.8761	96.1729	2016	41
29	Ko Zay Yar	16.86931	96.19431	2018	32
30	Thoon Mobile	16.86482	96.19708	2017	31
31	Mobile Brother	16.87643	96.20245	2012	37
32	Shwe Zee Kwet_2	16.89384	96.18296	2013	47
33	Heart 4 Mobile	16.89006	96.17561	2015	48
34	Star Mobile	16.88948	96.17416	2017	48
35	Hello Sweet	16.86773	96.18644	2016	32

(Sources: Field Surveyed from 31st December, 2018, 1st and 6th January 2019)

In order to analysis the data, it needs to entry the raw data into excel form with mobile shop name, location point (latitude and longitude), established year and ward name. Therefore, the following table shows the list name of mobile phone shop location within study area.
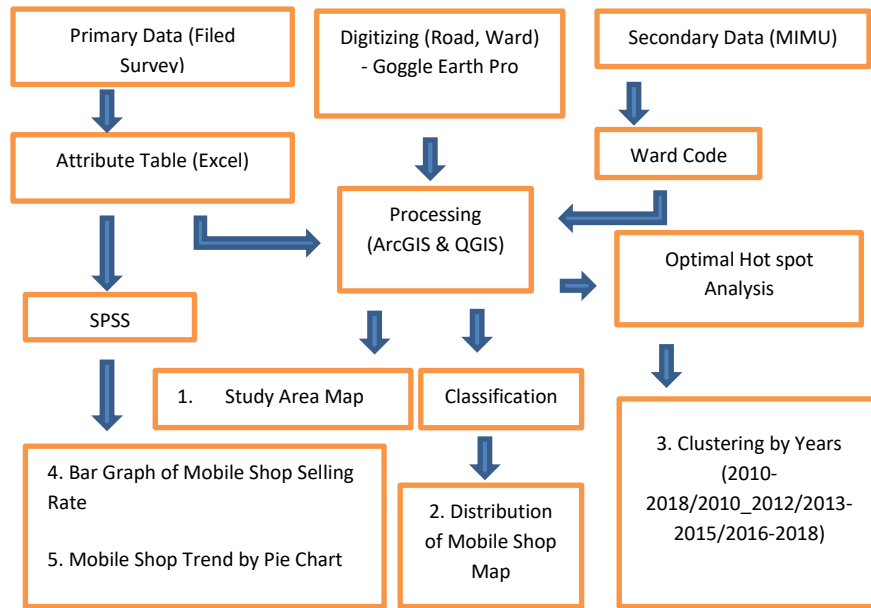
Work Flow Diagram

Figure (2.1): Flow Chart for Project Work Flow

III.   DATA PROCESSING AND USE OF TECHNIQUES

Export of Study Area

Open the ArcMap and add shape file of Myanmar State and Region boundary. And then, export the Yangon Region map from it. After that, add Myanmar township boundary shape file into ArcMap again. It needs to export Yangon Region Township first in order to get our study area map being of it in Yangon region. When it is getting the Yangon Region Township shape file, the study area map of Dagon Myothit (North) Township come out.

Classification of Mobile Shop's Distribution and Clustering

It needs digitizing the road and ward boundary of study area in order analyzing where is mobile shop distribution. So, it needs helping from satellite image in Google earth pro. And then, it was using the polygonize tool for processing KML file into polygon shape file by QGIS. Before, analyzing the distribution of mobile shop, it needs to join the attribute table with ward code.

After all of above, add this shape file and point location shape file into ArcMap, and display its latitude and longitude with WCGS-84 datum. And then we could classify by three classes with natural break within 2010 to 2018 mobile shops establishing within the study area.

Spatial Autocorrelation of Mobile Shop developing

In this step, there needs to analysis with this method in order to get where and when more distribute of mobile shop by using the raw data from above step. Therefore, add the study area shape file first in to ArcMap and add study area attribute table (.xlsx file). After that, it was using spatial analysis tool in order to analyze the hotspot map by interval year.

Bar Graph of Mobile Shops' phone Selling Rate and Mobile Shop Trend in the future

Table (3.1): Attribute Table Result of Field Survey Question

Sr. Name	Name	Resason_Opening	Owner	Selling_Month	Selling_Rate	Facts_Selecting	Mobile_Future
1	AAA Mbile	2	Personal	4,10,11	Good	2	Good
2	Digital Mart	1,3	Personal	11	Good	2	Good
3	Unitel_2	8	Share	4	Good	2	Good
4	884	1	Personal	10	Good	2	Good
5	Unitel_1	1	Share	6,7	Good	2	Good
6	Myter Mobile	2	Personal	13	Good	2	Good
7	Kyaw	1	Personal	10	Good	2	Good
8	Daw Pu	1	Personal	10	Good	1	Fair
9	Let Pan Wei	2	Personal	3,4,5	Good	1,2,5	Poor
10	Ko Zay Yar	1	Personal	7,8,9	Good	1	Good
11	Thoon Mobile	4	Personal	10	Good	1	Fiar
12	Shwe Zee Kwet_2	8	Share	13	Good	1	Good
13	Heart 4 Mobile	7	Personal	10,10	Good	1	Fair
14	Star Mobile	1	Personal	10	Good	1	Fair
15	Ring Mobile	2	Personal	1	Fair	1,2	Poor
16	So Good Mobile	3	Personal	11	Fair	4	Poor
17	Shwe Zee Kwet_3	1	Share	10	Fair	2	Fair
18	Nay Myo	7	Personal	13	Fair	1	Fair
19	Thamade	1	Personal	10	Fair	2	Fair
20	Samsung	1	Share	9.10.11	Fair	2	Fair
21	Shwe Zee Kwet	1	Share	10	Fair	2	Fair
22	DG Mobile shop	1,3	Personal	10	Fair	1	Good
23	Boss Mobile	1	Personal	13	Fair	1,2,4	Poor
24	Next Sale and services	1	Share	13	Fair	1,2	Good
25	Easy Talk Myanmar	8	Personal	13	Fair	1	Fair
26	Bright	8	Personal	13	Fair	1,2,3,4	Poor
27	Mobile Brother	1	Personal	10	Fair	2	Good
28	Hello Sweet	1,4	Personal	12	Fair	2	Good
29	Nay Yee	8	Personal	11,12	Not Good	1,2	Fair
30	Mr. Phone	2,4	Personal	10.11.5	Not Good	1	Fair
31	Best One	1	Share	10	Not Good	1	Fair
32	Sky Moon	8	Personal	3,4,5	Not Good	5	Fair
33	D Mart	6,8	Personal	11	Not Good	2	Fair
34	Mega Touch	1	Personal	7,8,9	Not Good	2	Fair
35	360 Mobile	8	Personal	13	Not Good	3,4,5	Good

(Sources: Study Team at Field Survey)

This part was used Excel and SPSS software to access the rate of mostly selling rate within a year and mobile shop Trend in the future, ownership, reason for establish mobile phone shop and important facts for establish mobile phone shop. Therefore, it need to entry the data first into Excel and SPSS software by collecting field survey data. And it was analyze by pie chart and bar graph in order to see clearly the data result. (Note: the mark 1, 2, 3 could be seen in Annex-1 which is the survey questionnaires form).

IV. RESULTS AND DISCUSSION

Distribution of Mobile S hops

Surveying was done along four main roads of Dagon Myothit (North); Pyi Htaung Su Main Road, Pin Long Main Road, General Ba Htoo Main Road and U Wi Sara Main Road. The most abundant distribution can be seen along the Pinlong Main Road. It is obvious that they are rarely clustered along the Pyi Htaung Su Main Road and U Wi Sara Main Road. They are appropriately distributed along Bomu Ba Htoo Main Road.

It has to be assumed that the Pin Long Main Road and Bomu Ba Htoo Main Road are marketable places because there are a lot of junction points, City Mart supermarket and they are always crowded with people, shops and households. Pyi Htaung Su Main Road is separated place and there is Northern Dagon industrial zone on the U Wi Sara Main Road and therefore mobile phone shops are rarely dispersed along these two roads.

Mobile Phone Shops Developing

The establishment of mobile phone shops had increased between 2010 and 2018 in average. The reason may be the availability of SIM Cards at lower price comparing with a decade ago who

would have thought in Myanmar that telephone network would change in Myanmar drastically, but thanks to the privatization of the mobile network after the country opens its economy. A decade ago a mobile connection will cost you a fortune, and owning one was a status symbol because of its hefty price tag. The number of mobile users has risen from 2 million to 35million in just 5 years after the SIM card prices are down from around 2,000,000MMK($1500) to just 1,000MMK($1) thanks to privatization for the telecom company. This means around 85% of Myanmar population is now using mobile and the internet. Myanmar has a whole of 4 Telecom register under Government. The Government has given license to 3 private companies Oreedoo, Telenor. MYTEL is the latest and the last to be given license in the 2014 February. MPT is state-owned company running for more than 100 years in the country. Oreedoo and Telenor became operational in 2014 and all networks are offering fast 4G coverage in population centers such as Yangon, Mandalay and Nay Pyi Taw.
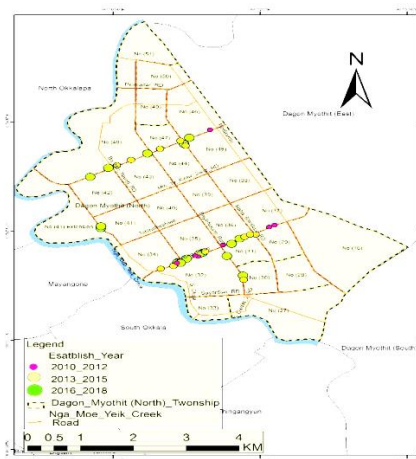
Figure (4.1): Mobile Phone Shop's Distribution
(Sources: Field Survey and Google Earth Pro)

According to bar graph in the following of Figure (5), it was 2010 that mobile phone shop started developing with 5 shops in study area due to Myanmar government starting open the country for implementing business in country. But it might not be sure of Myanmar law and policies related mobile shop. Later 2011 and 2012, it therefore shows decreasing rate of mobile shop investor. And next reason, it might be expensive of mobile accessories. So, regular people could not use the mobile phone.

As the first step of Naypyidaw's low-cost Mobile Phone Plan, the Burmese Ministry of Communications, Posts and Telegraph (MPT) has reduced the cost of SIM cards by around 50 percent. SIM cards will be available at 200,000 kyats (US$ 250) for GSM and CDMA 450MHz handsets, and 250,000 kyat ($312.50) *(Burmese SIM Card Price Slashed by Half, By HPYO WAI THA / THE IRRAWADDY Tuesday, March 6, 2012).* So, the rates of mobile shops are rising in 2013 and 2014.
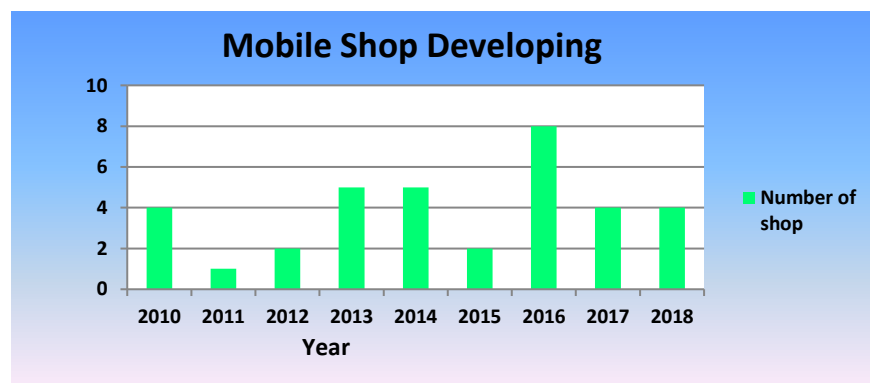

Figure (4.2): Mobile Shop Developing within 2010-2018
(Sources: Study Team at Field Survey)

The price of a mobile-phone SIM card serves as an indicator of the remarkable changes Myanmar is undergoing as it reforms its political system and economy. At the latest of 2015, government reduces the price of SIM card over 100 times to 5000 Kyats. Therefore, mobile phone shops are sharply rising in 2016 with cheaper SIM card. And later, for 2017 and 2018, it was going with one straight line due to everybody have already belonged to phone.
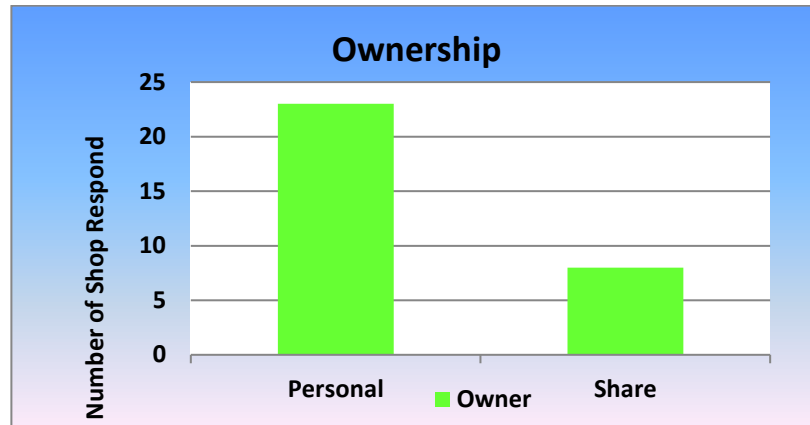
Ownership

Figure (4.3): Mobile Ownership

The bar graph shows the comparison of mobile show owner namely by personal and share within the study area. Over 20 shops of them are owned by individuals and the rest are shared ownership. According to it, most of shared ownership would not like to implement in this area due to the township is located the outside to Yangon city, which is starting developing in recent year.

Clustering of Mobile Phone Shops
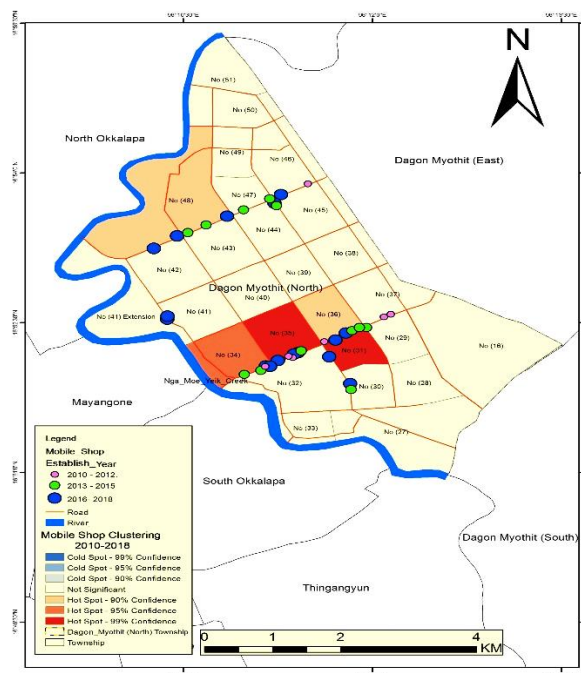
Figure (4.4): The year of 2010-2018 Mobile Shop Clustering

(Sources: Study Team at Field Survey)

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The map shows the overall clustering of establish mobile shop within the year of 2010 to 2018. It was analyze by auto correlation hot spot method under the spatial statistics tool. In which, the trend of mobile shop 99% are mostly establish in recent year at No (31) and (35) ward which is located beside the Pinlon Main Road and the center point of population crowed area. No (48), (34) and (36) are followed of 95% of mobile shop clustering within the study area.

Mobile Shops Clustering within 2010-2012
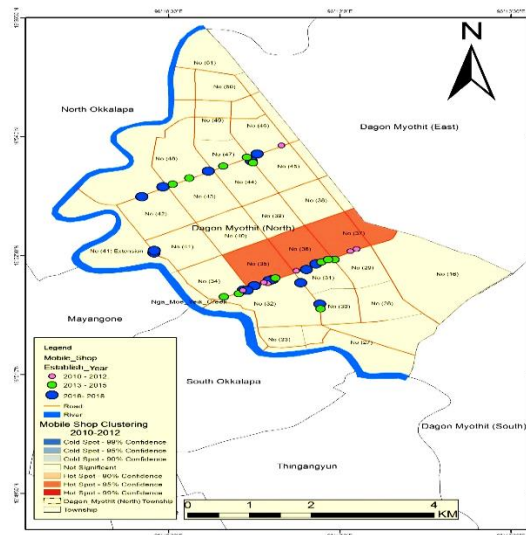
Figure (4.5): Mobile Shops Clustering within the year of 2010-2012

(Sources: Study Team at Field Survey)

In first period of year 2010-2012, it shows that mobile shop was developing on No (35), (36) and (37) ward. In which, the main road of Pinlong was starting developing in 2010. Most of implementer focused on it for implementing mobile shop. And also they who form this place respond "the main reason of chose place was is the main road and location of population crowded area".

The year of 2013-2015 Mobile Shops Clustering

For second period of study year, 95% confidence of mobile shop dispersion is on No (48) ward. This ward is located beside the Bomu Ba Htoo road which joined with North Oakalar and East Dagon (Myothit) and this place was starting developing with new buildings when looking at ground observation. The investor thought that place would develop. Therefore, they focused on it for investing of their investment. According to our surveying, most of shops from the place responded that they chose the place was the location by the side of the main road.

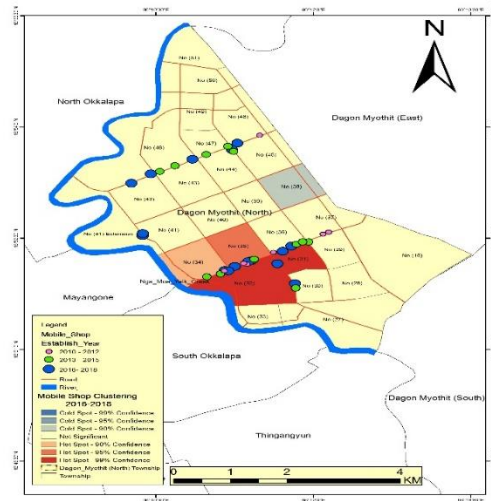**Clustering of Mobile Shops within the year of 2016-2018**

Figure (4.6): Clustering of Mobile Shop within 2016-2018
(Sources: Study Team at Field Survey)

In recent year, it was crowded back beside of Pin Long road with many shops. And now, this area was upgrade the road system, drainage system, and this area is also the place where have market and shopping center. This road was jointed with Parami road from South Oakalar and populations from this place are busier than other area. Therefore, most of investor focused on it for establishing mobile shop.
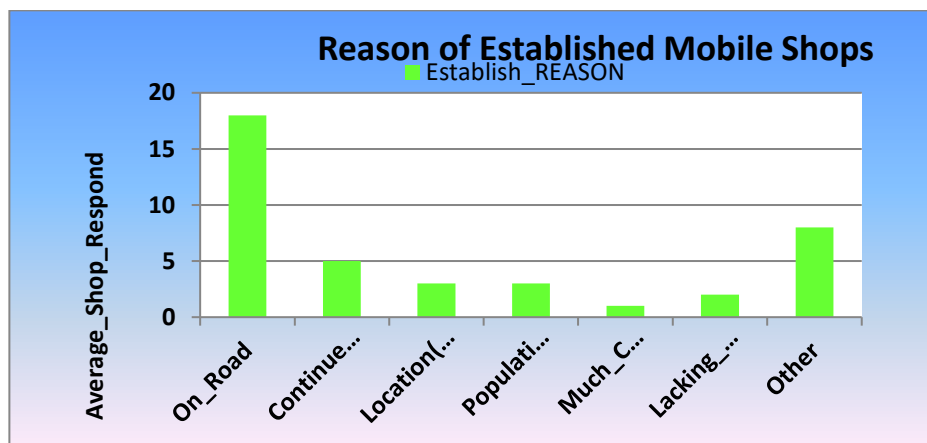
Reason for choosing location to establish mobile shops

Figure (4.7): Reason of Established Mobile Shops
(Sources: Study Team at Field Survey Questionnaires)

The above diagram mentions about the reason for establishing mobile shops at certain locations. It can be seen that most of the surveyed mobile shops choose their locations on the main roads. Some of them choose the locations where almost always crowed with people, shops and some choose their own land. Few of them choose the location where doesn't have any other mobile shops. A few of them choose their locations where most of their clients located.

Attitude of Mobile Phone Shop Developing in Future

Most of the responses from field survey, their attitude of mobile future will be fair (average) of mobile phone selling and mobile shop developing due to mobile shop have already developed. And some are responded by good point because IT age will never end and are going on developing. The

poor point of view from responder was that IT services will be more developed than retail of mobile shop due to everybody owned phone respectively and will be repair it again.

Comparison of selling rate in 2018 with starting establish mobile phone shops and attitude on its future
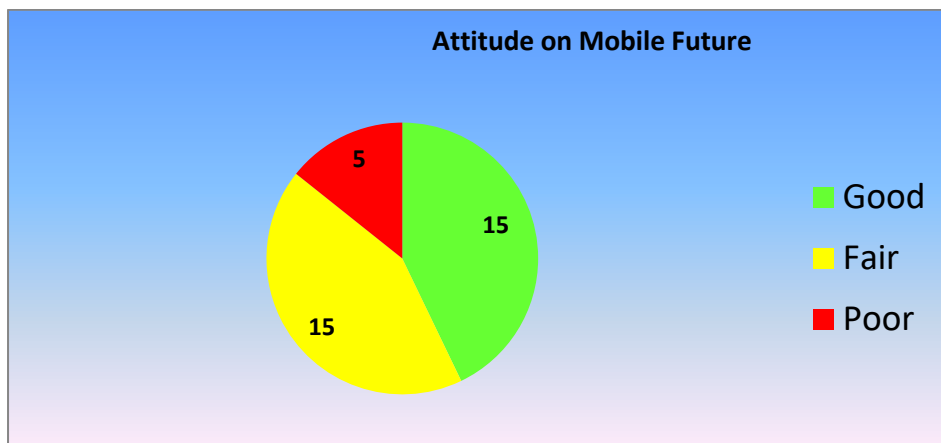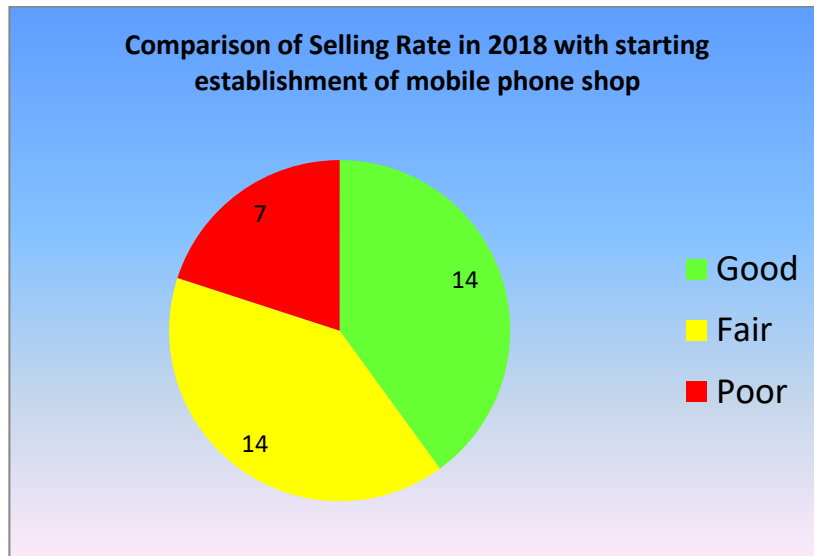

Figure (4.8): Comparison of selling rate in 2018 with starting establish mobile phone shop and attitude on its future

In the first pie chart, according to field survey, 14 of responder said that the mobile phone selling rates are increasing in 2018 by comparing in the first starting establishment of the shops. In which, most of mobile phone brand are becoming popular and phone is essential for every people. Another 14 of them had said that selling rates is fair on today due to mobile phone are becoming cluster in the area. The selling rate of the rest 7 of mobile shops, most of them are small individual owned shops, are decreasing in 2018 because most of people have already owned their phone and some of them don't go to small shops, just go to buy them at brand shop.

In second pie chart, 15 persons of the surveyed mobile shops hoped that mobile market have the good future trend and another 15 responder of them assumed that there will be fair on mobile future trend. The rest 5 responder of mobile shops thought that the mobile phones have not a good on future trend.

Based on these tow pie chart, it can be seen clearly that mobile phone market in the future will still be good condition for implementing mobile phone shop within the study area.

Mostly Selling Rate in Month

The bar graph illustrates the month that mostly selling rate of mobile phone within a year responded by 35 mobile phone shops owners and staff within the study township.

In general, it can be seen that the highly selling rate of mobile phone within a year is October and November, and no one responded on February. Most responder said that October and November are the Myanmar tradition festival such as Thadingut Pwe Taw and Ta Saung Taing Pwe Twe. Therefore, these months are highly of selling. In these months, most of people are giving mobile phone handsats to their friend and relatives as a present or gift during the festival. April, December and January are the Myanmar Thingyan Festival, end of the year and the first month of the year respectively. Thus, it also can be see these months show in the same of responding in moderately. The rest months are responded in very low rate due to rainy season and the school time.
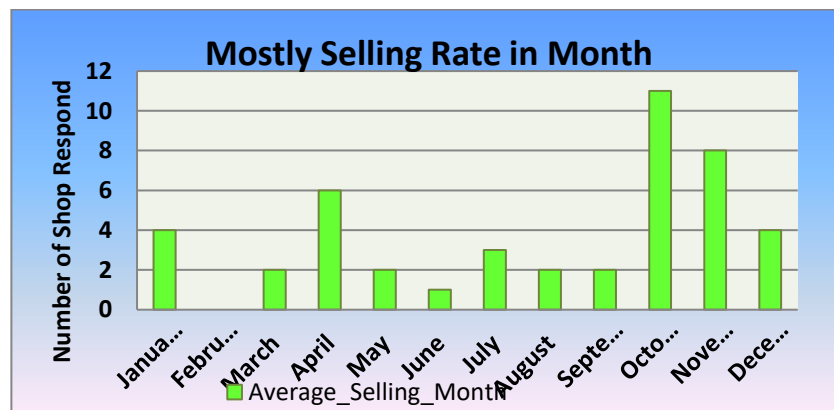

Figure (4.9): Mostly Selling Rate in Month

Note   : There can be seen high selling rate especially during the New Year season and famous festivals. Therefore there can be seen low selling rate in February because most of customers prefer to buy new handsets at the beginning of the year than other months.

CONCLUSION AND SUGGESTION

In conclusion, we surveyed the data about the distribution of the mobile phone shops location, establish year of its by ownerships namely shared and personal, reason of establishing mobile shops, important facts for opening the shop, attitude of mobile phone in the future and reason for its.. By using GIS software such as ArcGIS and QGIS, it was analyzing the clustering of mobile shop within study period show by yearly and distribution of mobile shop, mobile shop developing within the year of 2010 and 2018. In which, the result showed that mobile shop starting developed with a little mobile shop at the beginning of democracy period. And later, the government reduced the prices of SIM Card. The mobile phone shops were more developed with the location at Bomu Bahtoo Road. Later of 2016, mobile shops were sharply rising clustering on Pinlong Road.

For analyzing of their attitude of mobile shop developing in the future, it was used SPPSS software and Excel format based on survey question of important facts for establish mobile shop and comparing the selling rate from start opening the shop to 2018, mostly selling rate in month within the year and reason. In which, as an over all, most of responses from field survey have a good point on the potential of mobile shop future due to mobile phone is essential for every body and phone are variety of kind and popular.

This paper is the first research within Dagon Myothit (North) Township related with mobile industry research. In which, there have many limiting factors such as references, financial, human and time resources, and limited question for survey. Therefore, it should be taking more time with enough finical and human resources, and a very good preparing questionnaire form in order to analyze the data easily and preciously. But, this project paper might be support or references to

those who want to do the research related this topic. It still needs to do many research related mobile industry in Myanmar in order to develop the country.

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