

Regional Arrangement of City Functions in *Lugang* Town, Changhua Prefecture, Taiwan

Hideo Matsui

Abstract

Lugang, with a history dating back to the Qing dynasty, is a Taiwanese city that shares similarities with the old cities of Tainan and Taipei. *Lugang* Township (lù gǎng zhèn) is a central urban area that developed from *Lugang* port, and various attractive functions that emerged through the process of development and decline of the area are accumulated here. The turn of the century has seen a remarkable increase in the number of overseas visitors to Taiwan, a trend that is also visible in Changhua Prefecture, with many tourists visiting the historical sites of the *Lugang*. Consequently, in addition to functions supporting the *Lugang* as a regional center, functions supporting it as a historical tourist center have also proliferated, and the regional arrangement of city functions is now clearly visible. This study considers the distribution of the various functions in the central urban area of the *Lugang*, looking at both the functions that support a major regional center and the functions that support a historical tourist center. The study clarified that, among characteristics of the regional arrangement of the various relevant functions, is the fact that they are mainly located around *Zhongshan* Road, the axis of the central urban area of *Lugang*, centering especially on the area around its intersection with *Minquan* Road.

Introduction

The development of *Lugang* dates to the Qing dynasty (1662–1895); it is a Taiwanese town with a long history of expansion. *Lugang* got its start as a port town that developed at the mouth of the *Lugang* river. However, the functional deterioration of the bay due to silt accumulation and the subsequent

distancing of railway transportation hubs have led to a decline in the vitality of the town. Using topographic maps and documents primarily from the Japanese colonial period to 2000, the author (2017) clarified that the town of *Lugang* expanded to the rural area by growing extensionally from an area centered on the old port town and radially along major roads.

Dapei Ye (1997) divides the history of *Lugang*'s expansion into four periods: 1. Rise 1681–1783; 2. Prosperity 1784–1839; 3. Decline 1840–1894; and 4. Collapse 1895–1945.¹ Additionally, Tianfu Shi (1998) discussed the topographical information and the history of *Lugang*'s expansion and decline in three chapters of *The Geography of Lugang Township*: “Natural Environment,” “Urban Expansion” and “Places of Interest.” Based on these sources, the Changhua Cultural Affairs Bureau (2008) later divided the transitions that *Lugang* experienced into 10 periods and discussed the defining characteristics of urban expansion in each period: 1. Qing Dynasty, 2. Early Colonial Rule, 3. Colonial Rule around 1904, 4. Colonial Rule in 1935, 5. Late Colonial Rule, 6. Postwar Period 1945–1946, 7. Republic from 1960 onward, 8. Republic from 1965 onward, 9. Republic from 1973 onward, and 10. Republic from 1973 to the present.

In 2004, Changhua Prefecture held the “Changhua Cross-strait Academic Research Conference: Research on Lugang” in *Lugang* and published the results in “The 2004 Changhua Cross-strait Academic Research Conference: Collected Research on Taiwan.” This collection includes 27 research papers on *Lugang* that cover topics such as history, art, construction, and industrial expansion. Among these papers, Wenbin Huang and Hanhua Yan (2004) discuss *Lugang*'s expansion as a case study of the spatial expansion model. Additionally, Zhizhang Lai (2004) divides *Lugang*'s expansion into five historical periods: 1. Development as a Fishing Port (Ming Dynasty 1660 – Mid Qing Dynasty 1780), 2. River Shipping (Mid Qianlong Period 1780 – Daoguang Period 1840), 3. Continued Expansion Precariously Maintained² (Daoguang Period 1840 – Japanese Colonial Rule 1900), 4. Small Inland City Separated from Railway Transportation (Japanese Colonial Rule 1900 – Postwar 1980s), and 5. Comprehensive Reorganization Focused on Culture and Historical Sites (1980s – Present).

This is the process of expansion and decline that *Lugang* has experienced. The town did not experience the growth other historically significant cities went through from the Qing dynasty onward, leaving behind historical remnants that have become attractions today and allow *Lugang* to flourish as a

tourist city visited even by overseas travellers. On the subject of the increasing number of tourists in *Lugang*, Xiuzhen Xu, Jinfa Cai, Shishuo Ye, and Zongcheng Huang (2004) predicted the number of visitors³ using an estimation model.

To promote *Lugang*'s development as a tourist destination, Changhua Prefecture has been working to establish it as a National Scenic Area and, in 2015, it held an event called "Promoting a National Scenic Area in *Lugang*: 1st Regional Meeting." The conference proposed a plan for basic divisions in which the town of *Lugang* is positioned as a "core area," the surrounding inland area as a "local natural reconstruction zone," and the oceanside as the "Xibin Ecological Corridor." Furthermore, the event, "Promoting a National Scenic Area in *Lugang*: 2nd Regional Meeting," was held again in 2016, and five projects to be instituted for the National Scenic Area were announced: the Museum Project, Natural Scenery Project, Cultural Project, Tourism Project, and Transportation Project. *Lugang* is on the cusp of accelerating its efforts to become an even bigger tourist area.

The goal of this study is to determine the population changes in *Lugang* as it transforms into a tourist area following the process of expansion and decline described above. And this study elucidates the regional arrangement of the commercial and public city functions concentrated in the city center and the defining characteristics of such functions. For the purposes of the May to October 2017 study, dashboard cameras were used to record traffic along roadways and areas being studied in and around *Lugang*, and wearable cameras were used to record the exterior of shops for this study. In addition to determining city functions with the videos; such functions were confirmed using the Changhua Prefecture Commercial Phone Book and the Yellow Pages of the Republic of China.⁴ City functions that were consistent in both records were considered real, plotted in a distribution map, and investigated in detail.

1. Population Changes in the Major Urban Areas of *Lugang* and Surrounding Areas

The total population of Taiwan was 23,539,816 at the end of 2016, while Changhua Prefecture⁵ had a population of 1,287,146 and *Lugang* Town in Changhua had a population of 86,709.⁶ The major business area of *Zhongshan*

Road passes through *Lugang*'s city center from the northwest to the southeast, and this major urban area also extends to the hamlets of *Fuxing*, *Qiaotou*, and *Xishi* in *Fuxing* Village (population of 47,479) along the southern side of *Lugang*.

Lugang is made up of 29 neighborhoods, and urban districts extend into 18 of these. Additionally, *Fuxing* Village is made up of 22 hamlets, and *Lugang*'s major urban areas extend into three of these. This study investigated population changes in these 21 neighborhoods and hamlets over a five-year period from the end of 2011 to the end of 2016 (Fig. 1-a, 1-b).

	District NO.	District Name	Population (person) 2011 The end of Dec.	Population (person) 2016 The end of Dec.	Annual average population change number (person) 2011-2016	Annual average population change rate (%) 2011-2016
Lugang Urban township (龍港鎮)	1	Dongshi-li (東石里)	5,072	5,293	44	0.87
	2	Pulun-li (埔垵里)	5,504	6,106	120	2.19
	3	Dingcuo-li (頂厝里)	8,999	9,752	151	1.67
	4	Yongan-li (永安里)	5,430	5,526	19	0.35
	5	Jingtu-li (景福里)	1,398	1,317	-16	-1.16
	6	Guocuo-li (郭厝里)	695	641	-11	-1.55
	7	Yushun-li (玉順里)	1,591	1,448	-29	-1.80
	8	Xingong-li (新宮里)	1,123	1,017	-21	-1.89
	9	Shunxing-li (順興里)	1,129	1,093	-7	-0.64
	10	Luojin-li (洛津里)	1,076	1,018	-12	-1.08
	11	Zhongxing-li (中興里)	624	596	-6	-0.90
	12	Dayou-li (大有里)	1,401	1,373	-6	-0.40
	13	Caiyuan-li (菜園里)	1,275	1,213	-12	-0.97
	14	Longshan-li (龍山里)	916	883	-7	-0.72
	15	Xinghua-li (興化里)	812	767	-9	-1.11
	16	Changxing-li (長興里)	359	340	-4	-1.06
	17	Taixing-li (泰興里)	1,582	1,525	-11	-0.72
	18	Jiewei-li (街尾里)	2,825	2,802	-5	-0.16
Fuxing Rural township (福興鄉)	19	Qiaotou-cun (橋頭村)	3,185	3,099	-17	-0.54
	20	Xishi-cun (西勢村)	2,439	2,421	-4	-0.15
	21	Fuxing-cun (福興村)	4,321	4,289	-6	-0.15
Total			51,756	52,519	153	0.29

Fig.1-a

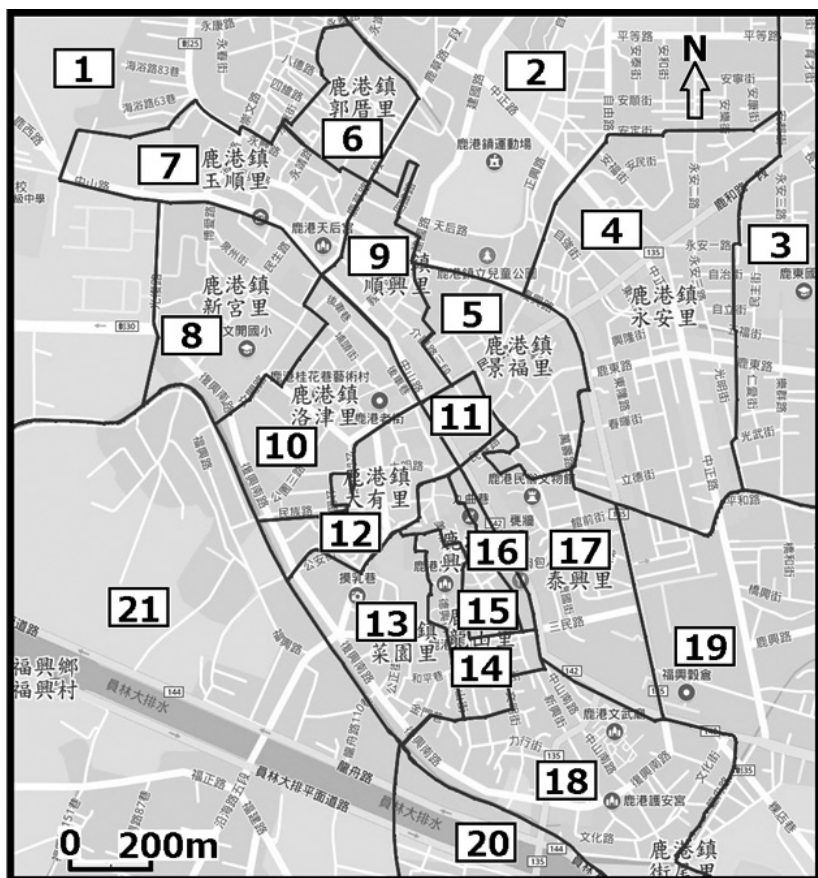


Fig. 1-b

Fig. 1-a,b Population change in the central urban area and its surrounding area, Lukang Township, Changhua Prefecture, Taiwan (2011-2016)

(Source: Created by author based on statistical data of Lukang Urban Township Government and Fuxing Rural Township Government)

Population increased overall in the 21 neighborhoods and hamlets, and the average annual rates of population change were positive as well. However, only four individual neighborhoods had positive annual rates of population change, while the remaining 14 neighborhoods and three hamlets had decreases in population and negative annual rates of population change.

The population increased in the neighborhoods of *Dongshi* (district no. 1), *Pulun* (district no. 2), *Dingcuo* (district no. 3), and *Yongan* (district no. 4). These four neighborhoods are primarily located in the northwest, north, and northeast sides of *Lugang*'s major urban areas, and the *Dongshi*, *Pulun*, and *Dingcuo* are on the periphery of urban areas. The neighborhood with the highest average annual rate of population change was *Pulun*, with growth exceeding 2.0%. This neighborhood includes *Lucao* Road, which passes through the major urban areas of *Lugang* and connects to Provincial Highway 17 (Western Coastal Highway), a highway that runs north along the coastline. After *Pulun*, the neighborhood with the second highest average annual rate of population change was *Dingcuo*, which is located in the northeast of *Lugang*'s major urban areas. This neighborhood includes *Luhe* Road, which connects to the major urban area of *Hemei* next to *Lugang* in the north, and *Ludong* Road, which connects to the National Freeway 1 (*Zhongshan* Freeway) interchange in the east. *Dongshi* is third in average annual rate of population change, and it serves as a connection point to *Luan* Bridge and *Lugong* Road, the two gateways to an industrial zone on reclaimed land called the Changbin *Lugang* Industrial Zone. *Yongan* is fourth in annual rate of population change. *Yongan* is adjacent to *Dingcuo* on the west and was developed relatively recently, compared to other urban areas. The wide *Zhongzheng* Road passes through it and is mostly traversing north-south.

Meanwhile, the neighborhood with the lowest average annual rate of population change was *Xingong* (district no. 8). *Xingong* is a district with a long history; it contains an area referred to as the *Quanzhou* Quarter because many of the people who lived there came from Quanzhou in mainland China during the Qing dynasty. After *Xingong*, the neighborhood with the second lowest average annual rate of population change was *Yushun* (district no. 7). The *Lugang* Mazu Temple in this district was built during the Qing dynasty (early years of Qianlong's reign) to celebrate the sea goddess Mazu, and it is both a major religious site for the people and a vital tourism resource for *Lugang* (Reiji Chubachi, 2015) (Photo 1).



Photo 1 Lukang Tianhou Temple (鹿港天后宮) (Taken by author on 10 May, 2017)

The neighborhood with the third lowest average annual rate of population change was *Guozhuo* (district no. 6). This neighborhood is home to the Zhongyi Shrine in the Beitou area of *Lugang*. Zhongyi Shrine is an offshoot of a shrine in *Quanzhou*, China and is said to have begun religious services in the 55th year of Qianlong's reign during the Qing dynasty (1790). *Guozhuo* was also an important region for the fishing industry once referred to as *Beitou* fishing village. These three neighborhoods of *Xingong*, *Yushun*, and *Guozhuo* are located in the northwest of *Lugang*'s major urban areas and share a history of development dating back to the Qing dynasty. Their average annual rate of population change is -1.50% or lower, and they are experiencing the worst population declines of any of *Lugang*'s major urban areas.

Furthermore, neighborhoods to the south that are located at the center of *Lugang*'s major urban areas such as *Jingfu* (district no. 5), *Xinghua* (district no. 15), *Luojin* (district no. 10), and *Changxing* (district no. 16) have average annual rates of population change from -1.50% to -1.00%, the second worst population decline after neighborhoods in the northwest of *Lugang*'s major urban areas. Additionally, neighborhoods in the central southern part of *Lugang*'s major urban areas such as *Caiyuan* (district no. 13), *Zhongxing* (district no. 11), *Taixing* (district no. 17), *Lungshan* (district no. 14), and *Qiaotou* (district no. 19) have average annual rates of population change from -1.00% to -0.50%. Even among *Lugang*'s major urban areas, some neighborhoods have average annual rates of population change from -0.50% to 0.00% and could be deemed areas with slight population decreases such as

Dayou (district no. 12), which includes areas along *Zhongshan* Road and along the southwestern part of the former *Lugang* Valley; *Jiewei* (district no. 18), which is located in the southernmost part of *Lugang*'s major urban areas; and *Fuxing* (district no. 21) and *Xishi* (district no. 20), which used to be on the left bank of the former *Lugang* Valley and became adjacent to one another when the river channels were replaced.

Generally, the five years of research (2011–2016) on population changes in the neighborhoods and hamlets of *Lugang*'s major urban areas shows notable population increases in the northwestern, northern, and northeastern areas on the outer edges of major urban areas, with the pattern being particularly strong in *Dongshi* and *Pulun*. Meanwhile, areas with drastic population decreases such as *Xingong* and *Yushun* are located in the northwest of major urban areas, a part of *Lugang* that has been developing since the late Qing dynasty. Population decline is not as intense in the central part of the major urban areas as it is in the northwest, and the decline is not even less intense in the south. This demonstrates that districts that urbanized since ancient times have more significant population decline, while districts that urbanized more recently have experienced less decline.

2. Changes in the Number of Tourists in Lugang, Changhua Prefecture

Inbound tourism from mainland China also has a powerful effect on the flow of tourists into *Lugang*, which is aiming to be a nationally recognized tourist area. According to the Taiwan Tourism Bureau's Tourism Statistics Database, 10,690,279 passengers traveled to Taiwan in 2016 (7,560,753 of whom came for tourism). When broken down by visitors' country and region of origin, mainland China rather than Japan has taken the top spot since 2011. In 2016, 3,511,734 people (about 33% of total visitors) came from mainland China. When the 1,614,803 visitors from Hong Kong and Macao are added, the number rises to 5,126,537 people (48%), about half of all visitors. In comparison, Japan is in second place at 1,895,702 visitors (18%).

Let us look at changes in the number of tourists in Changhua Prefecture (Fig. 2).

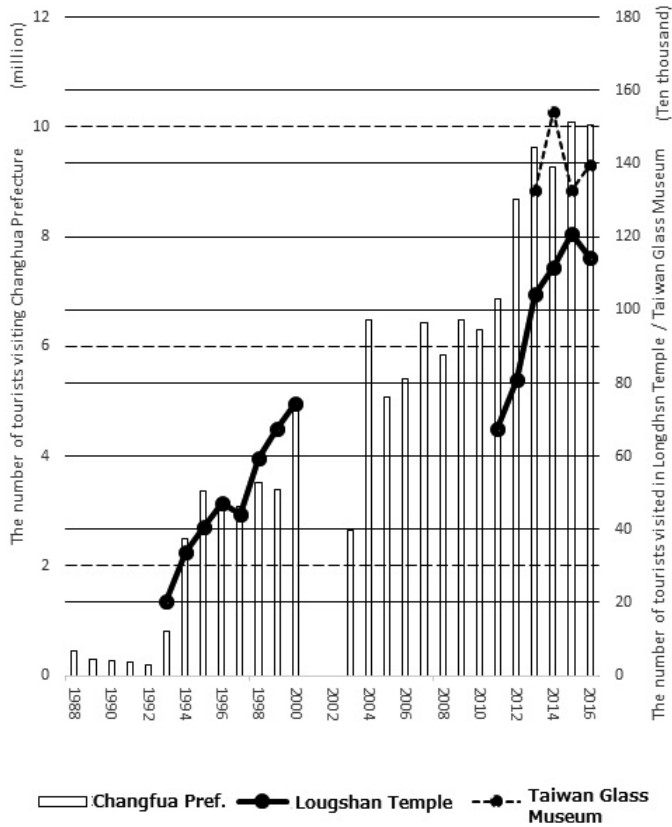


Fig.2 Change in the number of tourists of Changhua Prefecture, Longshan Temple, Taiwan Glass Museum(1988-2016)
(Source: Created by author based on statistical data of Changhua County Government)

The precipitous drop in tourists in 2003 is attributed to the outbreak of the infectious disease SARS in about 30 countries around the world. Afterward, the total number of tourists grew at a steady rate, reaching 10,024,417 people in 2016.

Next, let us look at changes in the number of tourists visiting Lugang

Lungshan Temple and the Taiwan Glass Gallery, tourist attractions in *Lugang* with publicly available statistics on tourist numbers (Fig. 2). Statistics on tourist numbers for Lugang Lungshan Temple have been listed in the Annual Changhua Prefecture Statistics Report since 1993, and the Lungshan Temple Management Association is the source of the statistics from 1993 to 2000. In 1993, 205,278 tourists visited Lugang Lungshan Temple. From 2011 to 2016, data was compiled by the Tourism Bureau, and this data shows that 1,141,970 tourists visited Lugang Lungshan Temple in 2016. Although the sources of the data were different, a simple comparison shows that the number of tourists grew by about 5.6% over 23 years. Lugang Lungshan Temple was built on *Dayou* Street near the old harbor in the mid-17th century but was relocated to its current location on *Lungshan* Street in the 51st year of Qianlong's reign during the Qing dynasty (1786). Lugang Lungshan Temple is a well-known temple that was recognized as a first-class national important cultural asset in 1983 (Photo 2).



Photo 2 Lukang Longshan Temple (鹿港龍山寺) (Taken by author on 10 May, 2017)

A study by Shihui Huang, Minami Tanaka, Toshio Mitsuhashi, Junichiro Kato, and Kiyoshi Miyazaki (1996) examines Lugang Lungshan Temple's cultural value and role in regional development. It demonstrates that Lugang Lungshan Temple, which is primarily devoted to the Buddhist deity of mercy, Kannon, serves the wider Changhua area and functions as a place of relaxation and interaction for the many people who visit it. It also shows that temples and historical sites like Lugang Lungshan Temple are spread out around *Zhongshan* Road (Photo 3).



Photo 3 Lugang Guide Map (part) (鹿港導覽圖 部分) (Taken by author on 13 Oct, 2017)

The Taiwan Glass Gallery is a relatively new tourist site within the Changbin Lugang Industrial Zone that was completed in March 2003. The gallery is one of 136 (as of June 2017) Tourist acceptance factories in Taiwan⁷ and is a popular tourist facility, where visitors can tour the Taiwan Glass Gallery and purchase glassware as souvenirs. Furthermore, by attracting customers on large tour buses, the number of visitors to the Taiwan Glass Gallery has exceeded that of the Lugang Lungshan Temple since the gallery opened.

On the other hand, *Lugang*'s charm as a tourist attraction lies in its historical sites. Throughout the year, many tourists travel to *Lugang*, primarily visiting old streets⁸ and temples. There are two old streets in *Lugang*'s main urban area. One is Lugang Old Street (Photo 4), which has been designated as a Historical Preservation Area. Lugang Old Street, which encompasses *Yuyao*



Photo 4 Lugang Traditional Wharf Street (鹿港老街埤頭街) (Taken by author on 10 May, 2017)

Street, *Putou* Street, and *Dayou* Street, represents what is left of an important district in the Qianlong years of the Qing dynasty, when *Lugang* was the most prosperous (Changhua Prefectural Society for the Promotion of Development in Lugang Old Street, 2008).

The other is Zhongshan Road Old Street. After Lugang Old Street developed, Zhongshan Road Old Street grew out of *Wufu* Street, which passed through a settlement of traditional longhouses that gradually developed along with *Lugang* Valley. At the time, Zhongshan Road Old Street was also referred to as a skyless street (City Office of Lugang, Changhua Prefecture, 2007). Keiichiro Mogi (1991) describes how skyless streets were constructed, stating that “a skyless street consisted of buildings with flat or gabled roofs on an extremely narrow pathway framed by markets on each side. Many skyless streets were apparently built in the mid-18th to mid-19th centuries, when *Lugang* was thriving”. *Wufu* Street was widened during Japanese colonial rule in 1934 and was the forerunner to the present day *Zhongshan* Road. At the time, the facades of buildings were decorated with all kinds of subtle ornamentation, and the area became known as Zhongshan Road Old Street (Photo 5).



Photo 5 Lukang Traditional Zhongshan Street (鹿港中山老街) Taken by author on 25 Oct, 2017

Among the districts of *Lugang*, Zhongshan Road Old Street is the one that functions as a central shopping area. Hiromi Nishikawa and Osamu Nakagawa (2013) classified initiatives to preserve and maintain old streets. Based on classifications of old streets by Tomita Yoshiro, they also categorized *Lugang*'s Zhongshan Road Old Street as a *Showa*-era (1926–1989) construction, which has “concrete or brickwork with cement spread on the exterior, presenting with a gray tone, and no buttresses with simple ornamentation” (Nishikawa & Nakagawa, 2014). Covered walkways referred to as “*Ting zi jiao*”⁹ were built on the road-facing side of buildings in *Lugang*'s Zhongshan Road Old Street as well, becoming one of the defining characteristics of historical streets described by Dongmin Li and Jun Hatano (2001).

In addition to such tourist sites, urban areas also offer access to many shrines and the remains of *sanheyuan*-style houses and houses of wealthy merchants. The area is also well known for its seafood (fried food, fried wraps, and omelets made with oysters, giant clams, clams, and shrimp) and noodles (stewed thin noodles). And it is even more appealing as a tourist destination because of its wide variety of traditional foods that can be taken home as gifts such as beef tongue rice cakes (pies in the shape of beef tongues), meat buns, steamed bread, and dried mullet roe.

3. Arrangement and Characteristics of City Functions in Major Urban Areas of Lugang

Lugang's major urban areas offer a mix of functions that support its character as a major regional city and a historical tourist city. As such, this study highlights 11 types of businesses and plots those shops, businesses, and facilities on a distribution map (Fig. 3).

The 11 types are public businesses/public services, finance/insurance businesses, real estate (intermediaries), trade, doctor's offices/hospitals, watches/eyeglasses, gold/silver/jewels (jewelry goods), eating establishments, bakery/rice cakes (bread/rice cake confections), religious products (Buddhist ritual implements), and religious facilities/temples.¹⁰ Each of these shops, businesses, and facilities were categorized as having 1) the primary function of supporting a major regional city, 2) the primary function of supporting a historic tourist city, or 3) a function of supporting both a major regional city and a historic tourist city. Then, the arrangement of each function within *Lugang*'s major urban areas was considered.

3.1 Primarily a function supporting a major regional city

This section will discuss shops, businesses, and facilities that fall under the categories of public business/public service, finance/insurance business, real estate (intermediary), trade, doctor's office/hospital, watches/eyeglasses, and gold/silver/jewels (jewelry goods).

First, the distribution of shops, businesses, and facilities related to public business/public service will be investigated to determine the arrangement of administrative functions. Most of the governmental organizations in Changhua prefecture and *Lugang* are concentrated in an area northeast of the intersection of two main roadways, *Zhongshan* Road and *Minquan* Road. The Changhua branch of the Ministry of Labor Workforce Development Agency, a central governing body in Taiwan, is located along *Zhongzheng* Road in the bypass on the outermost side of the major urban areas. Other regional organizations are also distributed in this area, including the Lugang People's Congress, City Office of Lugang, Changhua Police Department's Lugang Office, Changhua Fire Department's Lugang Office, Lugang Government Office, and Lugang Administrative Office.



Fig. 3 Distribution of stores, establishments and facilities in the central urban area of Lukang Urban Township, Changhua Prefecture, Taiwan (2017)
 Basic map: http://gissrv4.sinica.edu.tw/gis/twhgis_ja_JP.aspx (臺灣百年歷史地圖)
 (Source: Created by author based on field survey)

Shops and businesses related to finance/insurance are mainly distributed within the main commercial area along *Zhongshan* Road. There is a concentration of financial institutions (banks), in particular, near the intersection of *Zhongshan* Road and *Minquan* Road. Credit unions, investment companies, and insurance businesses are scattered outside of the main area.

Most shops and businesses related to real estate (intermediaries) are distributed between the areas of population growth in the northeastern urban areas and the main commercial area, or along *Zhongzheng* Road in the bypass. Although there are few shops, businesses, and facilities related to trade, they are similarly located to a similar manner to real estate (intermediary) businesses.

Doctor's offices/hospitals are scattered in areas such as *Zhongshan* Road, *Zhongzheng* Road, *Minquan* Road, *Minzu* Road, *Sanmin* Road, and *Fuxing* Road. A major hospital is located along the wide *Zhongzheng* Road.

Shops offering watches/eyeglasses and gold/silver/jewels (jewelry goods) are concentrated near the intersection of *Zhongshan* Road and *Minquan* Road and near Lugang First Public Retail Market (shortened as Lugang First Market) on the southwestern side of the intersection. Other shops in this category are located in the main commercial area along *Zhongshan* Road.

3.2 Primarily a function supporting a historic tourist city

Tourism resources within the major urban areas of *Lugang* include Lugang Old Street, Lugang *Zhongshan* Road Old Street, side streets (*Jiuqu* Lane, *Moru* Alley, etc.), and the former homes of wealthy merchants (Yilou, the Ding Family home, etc.), as well as temples such as Lugang Mazu Temple, Xinzu Temple, Lugang Lungshan Temple, and Wenwu Temple. Shops, businesses, and facilities targeting tourists are distributed around such historical sites. Another aspect of *Lugang*'s appeal are the shops selling religious products (Buddhist ritual implements), as well as the religious facilities/temples that people can visit, worship at, or travel between (when making the pilgrimage to the Baohu Dimu Temple, etc.). Zhaorong Li (2004) discusses the production of ritual furniture (ceremonial tables, altar cabinets, lamp holders, bell holders, and drum racks) in "A Historical Investigation of *Lugang*'s Wood Furniture Industry." The majority of shops offering religious products (Buddhist ritual implements) are concentrated in two districts along *Zhongshan* Road. One is the area along *Zhongshan* Road from where

it intersects with *Minquan* Road to *Lugang* Mazu Temple, and the other is the area along *Zhongshan* Road from *Minzu* Road to *Sanmin* Road. This area that stretches along *Zhanglu* Road, which connects the major urban areas of *Lugang* to Changhua City, has a string of shops selling ceremonial tables, religious statues, Buddhist statues, Buddhist ritual implements, and Buddhist altars.

Although there are 59 temples¹¹ in *Lugang*, those designated as religious facilities/temples in this study are the ones with permanent custodians, according to phonebook data. Temples such as *Lugang* Mazu Temple and *Xinzu* Temple, dating to the Qing dynasty, are concentrated in the north-western urban areas of *Lugang*. The majority of temples outside that area, including *Lugang* Lungshan Temple, which was moved out of the older part of town, are distributed in the area between the old *Lugang* Valley and *Zhongshan* Road.

3.3 A function supporting both a major regional city and a historic tourist city

The various shops, businesses, and facilities distributed around the city have never fulfilled just a single function supporting only a major regional city or a historic tourist city. However, due to their locations, there are shops that are used more frequently by local residents, those used more frequently by tourists, and those used frequently by both.

The eating establishment category includes frozen dessert shops, beverage shops, restaurants, cafeterias, and the like. These shops are distributed across a relatively broad area in the urban region. There is a particular concentration of these shops near *Lugang* First Market, its surrounding areas, and the area around *Lugang* Mazu Temple. Many worshippers visit on national holidays and during religious celebrations, and tourists look around these areas frequently as well. Although shops interspersed throughout *Minquan* Road, *Minzu* Road, *Ludong* Road, and *Zhanglu* Road are patronized by tourists, they are visited more often by Taiwanese, which has a culture of eating out frequently. As a result, eating establishments are distributed not only around tourist sites but also in residential areas.

Meanwhile, tourists purchase local snacks from stores selling baked goods and walk around eating them. There is an even more dense concentration of eating establishments in the areas around Lugang Mazu Temple and Lugang First Market. Additionally, from the intersection of *Zhongshan* Road and *Minzu* Road to the intersection of *Zhongshan* Road and *Sanmin* Road, shops are located along the southwestern side of *Zhongshan* Road at consistent intervals.

4. Conclusion

This study examined population changes in the major urban areas of *Lugang* as it attempts to become a tourist destination by investigating population trends in its urban areas. It also investigated the characteristics of the arrangement of city functions by studying 11 types of shops, businesses, and facilities that perform city functions. Below is a list of the findings.

1) The population in *Lugang*'s urban areas is growing in areas on the outskirts in the northwest, north, and northeast of central urban areas such as *Dongshi*, *Pulun*, and *Dingcuo*. Meanwhile, neighborhoods in major urban areas with intense population decline such as *Xingon*, *Yushun*, and *Guocuo* are located in the northwestern part of the major urban areas, a region whose development dates to the Qing dynasty. Additionally, population decline is not as intense in the central part as it is not in the northwest, and the decline is even less intense in the south.

2) The main tourist resources in *Lugang* are Lugang Lungshan Temple, Taiwan Glass Gallery, Lugang Old Street, and Lugang Zhongshan Road Old Street. Lugang Mazu Temple, which celebrates the goddess Mazu, and Lugang First Market are the core of central *Lugang*'s tourist district.

3) Characteristics of the Regional Arrangement of City Functions.

(1) Administrative functions of *Lugang* as a major regional city are concentrated in an area that extends from the intersection of *Zhongshan* Road and *Minquan* Road (hereinafter referred to as the core intersection) to the northeastern fan-shaped sector between *Zhongshan* Road and *Minquan* Road.

(2) As for financial and insurance businesses, banks are concentrated near the core intersection along Zhongshan Road. Additionally, insurance businesses are dispersed along major roadways around urban areas.

(3) Although shops selling high-end products such as gold/silver/jewels (jewelry goods) are concentrated near the core intersection, they are distributed in locations farther from the core intersection than the banks.

(4) Shops selling products such as eyeglasses/watches are located even farther out of the core intersection than the gold/silver/jewels (jewelry goods) shops, and there is also a comparatively large distribution of them around *Lugang* First Market.

(5) Eating establishments and shops selling bread or rice cake confections, well-known souvenirs of *Lugang*, are concentrated in two areas: around *Lugang* Mazu Temple and *Lugang* First Market.

(6) The majority of religious products (Buddhist ritual implements) are located along *Zhongshan* Road. There are two concentrations at the north-western and southeastern tips of the commercial area along *Zhongshan* Road: the area from its intersection with *Minquan* Road to *Lugang* Mazu Temple and the area from its intersection with *Minzu* road to its intersection with *Sanmin* Road.

(7) Most traditional religious facilities/temples are distributed in the northwestern urban part of *Lugang*.

Looking at the regional arrangement of functions as in (1)–(7) demonstrates that functions are centered around *Zhongshan* Road. And various urban functions are located along the *Zhongshan* Road, with the intersection of *Zhongshan* Road and *Minquan* Road functioning as the core intersection. Additionally, in two directions (toward *Lugang* Mazu Temple due north-west from the core intersection along *Zhongshan* Road and toward *Wenwu* Temple due southeast), there is a transition from banks to jewelry stores, to watches/eyeglasses, to religious instruments. This is a transition from financial services to luxury shopping goods, to shopping goods, to shopping goods purchased once in a generation. This can be interpreted as a regional arrangement based on city centrality and the frequency of purchases by consumers.

Notes

1. “Japanese colonial rule” (1895–1945) can also be referred to as the “Japanese occupation,” depending on the perspective and beliefs of the author. As a rule, this paper uses the phrasing of the original author.
2. The Japanese translation of the Chinese term “笱延殘喘” (subsequently

translated into English as “Precariously Maintained”) is a nonliteral translation by the author.

3. “Visitor” has the same meaning as “tourist.” The number of visitors from Taiwanese statistical tables that has been cited in this paper was rephrased as “number of tourists.”
4. The Yellow Pages of the Republic of China is an online phone book. <http://www.jyp.com.tw/> (Last viewed 11/29/2017)
5. Changhua Prefecture is made up of the municipalities of Changhua City and Yuanlin City, six towns, and eighteen villages.
6. Although Taiwanese population statistics (reporting of births and deaths totaled at the end of each month) are similar to the Japanese resident register ledger population, it is more appropriate to look at them as Japanese census of family register (natural variation) because they do not reflect population movement (social change).
7. The number of tourism factories comes from the Tourism Factory Registry on the Government Data Publication Platform. <https://data.gov.tw/dataset/6848> (Last viewed 11/29/2017)
8. “*Laojie* (Old street)” is a general name used both in mainland China and in Taiwan to indicate a former urban area and can also refer to a historical neighborhood, similar to the usage of the term “traditional architectural area” in Japan. Unlike mainland China, even the oldest of Taiwan’s cities formed in the Qing dynasty such as *sanheyuan* and *siheyuan*. And Taiwan is attempting to develop tourist areas by creating old streets through the preservation and *restoration* of Meiji-era (1868–1912) buildings and districts (prefectural offices, stations, etc.) and buildings or collections of buildings that preserve historical architectural methods.
9. “*Ting zi jiao*” resemble Japan’s covered alleys and passages under the eaves of houses.
10. Although clothing/apparel sales are considered an appropriate indicator for measuring how urban a city is, they were left out of this study because there is still room to investigate differences in purchasing behavior based on time period and generation in Taiwan.
11. The source for the number of temples is the “Changhua Prefecture: Lugang Township Revitalization and Environmental Integration Plan.”

References

- Changhua Prefectural Lugang Old Street Development Promotion Association. (2008). *Readings on Lugang Old Street*.
- City Office of Lugang, Changhua Prefecture. (2007). *Paradise on Lugang Old Street*.

- Changhua Cultural Affairs Bureau. (2008). *Changhua Prefecture: Lugang Township Revitalization and Environmental Integration Plan*.
- Chubachi, R. (2015). The shrine and culture sightseeing in Taiwan ; The religion that became the fashion and local turnout. *Journal of Hokkaido Tourism Research*, 2(1), 10–18.
- Chunhua Telecom Co., Ltd. (2016). *105–106th Annual Changhua Prefecture Commercial Phone Book*. pg. 353.
- Xu, X., Cai, J., Ye, S., & Huang, Z. (2004). Forecasting the number of tourists: A case study of Lugang. *The 2004 Changhua Cross-strait Academic Research Conference: Collected Research on Taiwan*, 385–396.
- Huang, S., Tanaka, M., Mitsuhashi, T., Kato, J., & Miyazaki, K. (1997). Role and Possibility of Long-Shan Temple in Regional Development of Lu-Gang, Taiwan –Methodology of Regional Development by Utilizing Temple Culture. *Design Research*, 43 (6). 51–60, 1459–1468.
- Lai, Z. (2004). Study of the Interface between Historical Changes on Lugang Streets. *The 2004 Changhua Cross-strait Academic Research Conference: Collected Research on Taiwan*. 341–359.
- Li, D., & Hatano, J. (2001): The Formation and Changes of The Town -Houses with Arcade in Di-Hwa Street, Taipei City. *The Architectural Institute of Japan's Journal of Architecture and Planning*, (457), 237–242.
- Li, Z. (2004). A Historical Investigation of Lugang's Wood Furniture Industry. *The 2004 Changhua Cross-strait Academic Research Conference: Collected Research on Taiwan*. 429–454.
- Matsui, H. (2017). Expansion of build-up area Lugang Town, Changhua County, Taiwan. *Geo-environmental Science Research (Rissho University)*, 19, 95–102.
- Mogi, K., Katayama, K., Daxing, Z., Toyota, T., & Tejima, N. (1991). Research on the Barracks-style Residences. *Journal of Housing Research Foundation, Annual Research Report No. 18*, 1–15.
- Nishikawa, H., & Nakagawa, O. (2013). Rows-of-Houses Preservation Project in Taiwan Lao-jie. *Architecture and Planning*, 78(685), 725–733.
- Nishikawa, H., & Nakagawa, O. (2014). The Spread of Townscape of Roofed Walkway over Local Towns of Taiwan During Japanese colonial Period — Focus on the relation with the city improvement planning. *Journal of Architecture and Planning*, 79(700), 1459–1468.
- Lugang Maintenance Committee, led by Tianfu Shi (ed.). (1998). *Geography of Lugang (Changhua Prefecture)*. Lugang: City Office of Lugang, Changhua Prefecture.
- Huang, W., & Yan, H. (2004). Study of the Construction of Spatial Structural Models in the Streets of Taiwan's Early Riverbank Cities: A Case Study of Lugang. *The 2004 Changhua Cross-strait Academic Research Conference: Collected Research on Taiwan*. 127–143.
- Ye, D. (1997). *The History of Expansion in Lugang*. Zuo Yang Publishing House.