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Rebecca Sultana, Shashwat Dhungana and Nimnee Bhatta

Southern University Bangladesh, Bangladesh

Nepal Development Research Institute, Nepal

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Understanding the TOD Concept of Historical Areas Through Precedent Studies

Ari Widyati Purwantiasning^{1*}, and Saeful Bahri²

¹Department of Architecture, Faculty of Engineering, Universitas Muhammadiyah Jakarta, Indonesia

²Department of Electrical Engineering, Faculty of Engineering, Universitas Muhammadiyah Jakarta, Indonesia

Abstract.

This research is part of multi-year research, which is undertaken for two years. It aims at understanding the implementation of TOD concept through precedent studies. The significance of this research is the areas of precedent studies of historical areas within metropolitan cities. The idea of TOD itself has been regarded as a perfect solution for a metropolitan city which has a relatively large population. This research has conducted historical areas for the study because the concept of TOD has been promoted as a perfect solution to improve and enhance the quality of life of the historical areas (the built environment and the local community itself). This research has implemented the qualitative method using precedent studies as a way of thinking to get the typology of the historical district which used the TOD concept. We have conducted two precedent studies which have a historical area within a metropolitan city. They are Hong Kong with Kowloon Historical Area, and Turkey with Istanbul Historical Area. Each precedent studies have described their significance and uniqueness of their character of the historical area. From this initial study, we have concluded the character of the historical area in each precedent studies, and we have underlined the typology of the implementation of TOD concept within the historical area.

Keywords: Transit Oriented Development, Historical Area, Kowloon, Istanbul

1. Introduction

The existence of many historical buildings within historical areas in the metropolitan city has encouraged many parties to have the willingness to protect, preserve and conserve them as assets of cultural heritage particularly architects, planners, and historians. This condition also has encouraged either Local Government as well as Central Government to initiate a programme which is related to the issues of historical buildings particularly in maintaining and enhancing their quality. The main problem arisen for historical buildings is a lack of utilities and lack of maintenance. This condition because the cost of the maintenance is relatively high, and usually government has a minim budget to handle this issue. In some developed countries, to solve the problem, local government and central government have a partnership with the private sector to finance the maintenance of historical buildings.

One of the main problems within historical area particularly related to a historical building is the lack of utilities which is one of it is lack of infrastructure within the historical area. This condition will degrade the quality of the historical areas particularly the quality and performance of historical buildings. One of an alternative solution to solve this problem is by providing new concept which is synergized to improve and enhance the quality of the built environment as well as the quality of the local community who live within the historical area.

Historical attachment of local community has been regarded as an essential thing in the designation process of the historical area. The historical attachment also become an appropriate approach in digging up the level of emotional and memory of an individual to cultural heritage, in this case, is a historical area with historical buildings within it (Madgin, 2013)[1]. By using this approach, the need of the local community could be revealed to the sustainability and their need for the historical area. The necessity of infrastructure itself could be reached by implementing the concept of Transit Oriented Development which prioritizing the need of comforts and safeness for pedestrians, in this case, is the visitors and the local community of historical site. As mentioned by Taki et.al (2018) [2], that the well-regulated city is characterized by the conditions of land use and transportation systems and it indicates economic prosperity.

This research is aiming to provide a conceptual idea and suitable thought about how to synergize the concept of Transit Oriented Development with historical attachment approach to enhance and improve the quality of the built environment as well as the quality of local community significantly. As a part of multi-year research, this paper is aiming to provide two precedent studies to have an understanding of Transit Oriented Development concept. By understanding the concept of Transit Oriented Development through these two precedent studies, it can be concluded and underlined the typology of historical areas which are using the concept of Transit Oriented Development. Although this paper is an initial result, it will become the basic thought to do more and to implement it within a case study conducted in Indonesia, generally and Jakarta as a metropolitan city, particularly.

2. Theory of Transit Oriented Development

2.1. Basic Concept of Transit Oriented Development

As mentioned in Purwantiasning (2017) [3], TOD which stands for Transit Oriented Development could be defined as “an integrated urban place designed to bring people, activities, buildings and public space together, which easy walking and cycling connection between them and near excellent transit service to the rest of the city...” [4]

To conclude the definition of TOD, Purwantiasning (2017) [3] also explained that a district of an area which implemented the concept of TOD is an area or a neighborhood that could be said as an area or a district which could accommodate the community in doing many activities within it. In other word, this area or district should have various zones, not only for residential but also for commercial, public use, and green space [5]. To underline that statement, it also could be said that an area or a district which implement the Transit Oriented Development concept could be developed by thinking of the need of pedestrians and bikers. It means that mostly the circulation way within an area of TOD should be provided for those users (pedestrians and bikers). The dimension, size, and numbers also become an essential thing to be considered in the area with TOD concept, because the circulation way should accommodate more for pedestrians and bikers rather that for vehicles. According to these matters, it can be concluded that an area or a district with TOD concept should be designed and planned to be near to the public transportation system (MRT, LRT, Bus Station) that could be accessed by walking distance, and this public transportation could deliver the people to the city center comfort and safe [5].

2.2. Basic Principles of Transit Oriented Development

Purwantiasning (2017) [3] has mentioned, referring to TOD Standard Book from Institute for Transportation and Development Policy (2017) [4], it has been explained that there are some basic principles of the Transit Oriented Development concept that should be fulfilled in the implementation of the concept. All these fundamental principles should be completed and accomplished in the design, plan and to develop an area or a district in the application of Transit Oriented Development. There are eight principles in the Transit Oriented Development concept, as follow:

2.2.1. Walking

Basically as mentioned in the basic concept of Transit Oriented Development, the area or district which implemented this concept should provide the circulation way for the pedestrian. The activity of walking is a primary in the area or district with the TOD concept. This principle is encouraging the planner, architect, and developer to develop the area or district which promote walking as a primary and fundamental principle. Walking is a natural activity of human being, which is considered as a healthy, a clean, an efficient, an affordable and an effective way to get from one place to another which is accessible for all people. Also, it could be said, that walking is one essential component that will be needed in almost all traveling which using the transit system. By promoting this principle, a sustainable environment could be reached.

2.2.2. Cycling

As mention in the above chapter, that an area or district with the TOD concept should have a priority for pedestrians and bikers. Walking activity is an activity for pedestrian, and cycling is an activity for bikers. To fulfill this principle, the area or district with the TOD concept should provide a cycling path. This principle has been regarded as a second primary activity which is a healthy, an affordable and an inclusive mode of mobility within an urban area fastly.

2.2.3. Connecting

The basic concept of TOD is to connect one function to another in one area or district. Developing an area which has a crowded network for transportation with roads, streets, and ways, will encourage the urban planner to design and plan the area of TOD with a familiar environment for users. The good design of an area or district with the TOD concept will enhance the cognition of the users. Also, the compact network of roadss, street, ways will connect between one function to another one.

2.2.4. Transiting

According to the terminology of TOD which stands for Transit Oriented Development, it could be underlined that the area or district which implemented the TOD concept should be near to the mass or public transportation facility which has good quality. Purwantiasning (2017) [3] also mentioned that accessible mass transportation facility for pedestrian will encourage people to walk and use the pedestrian way, and people will no longer use a private vehicle to go to one place to another.

2.2.5. Mixing

One of the principles in the concept of Transit Oriented Development is by mixing some function, activities, uses, needs with the variety of economic level and demography condition of the community within the designated area or district. The planning or the area should consider many aspects either physically or non-physically.

2.2.6. Densifying

The concept of Transit Oriented Development usually has been implemented in the metropolitan cities, which are regarded as cities with high density of population. To maximize the density of the area, the planner should consider by densifying the area or district to justify in accommodating all community. One of the solutions is by providing mass transportation and vertical housing within the area or district.

2.2.7. Compacting

Compactness is one of basic guiding principle in the concept of Transit Oriented Development. Proper planning and design of an area or a district with Transit Oriented Development concept should provide a space or a zone which have an accessible distance from residential zone to the mass rapid transportation facility. By delivering compactness within an area or a district, all facilities within an area or a district could be accessed easily to reach comfort, safeness, efficiency, and reliableness.

2.2.8. Shifting

Within an area or a district with a concept of Transit Oriented Development, the mobility of people is highly recommended and encouraged. To reach this goal, the planning and design of the area or district should consider the possibility of people doing many activities within the area by shifting one activity to another without using any private vehicles. Parking area and street, as well as pedestrian ways and bicycle ways, should be well organized to minimize the use of private vehicles.

In metropolitan cities, the development of Transit Oriented Development (TOD) model has been proposed with the aim of developing the TOD model and of determining potential areas of TOD as mentioned by Rahmat, et.al (2013) [6]. Rahmat, et.al (2013) also stated that the method has also the aim of being an effort in providing the suitability of the implementation of TOD concept for creating a systematic and comprehensive implementation of transit stations in urban areas to overcome the problem and conflict of traffic congestion. i.e. it can be used as a guide to determine the potential areas of TOD by local government or planners to solve the problem of rapid and massive urbanization recently. Rahmat, et.al also believed that the proposed model has also the effect of increasing the level of implementation of project development in the transport planning phase, as detailed requirements of the determining the potential areas of TOD process [6].

3. Research Method

This research has implemented the qualitative method using precedent studies as a way of thinking to get the typology of the historical area which used the TOD concept. We have conducted two precedent studies which have a historical area within the metropolitan city, and have a significant character. The two precedent studies are Hong Kong with Kowloon Historical Area, particularly Tsim Sha Tsui District, and Turkey with Istanbul Historical Area, particularly Sultan Ahmet District. Each precedent studies have described their significance and uniqueness of their character of the historical area. From this initial study, we have concluded the character of the historical area in each precedent studies, and we have underlined the typology of the implementation of TOD concept within the historical area. Using eight principles of Transit Oriented Development [4], this research has described and analyzed one by one of those principles.

4. Discussion of Precedent Studies

1.1. Kowloon Historical Area of Hong Kong

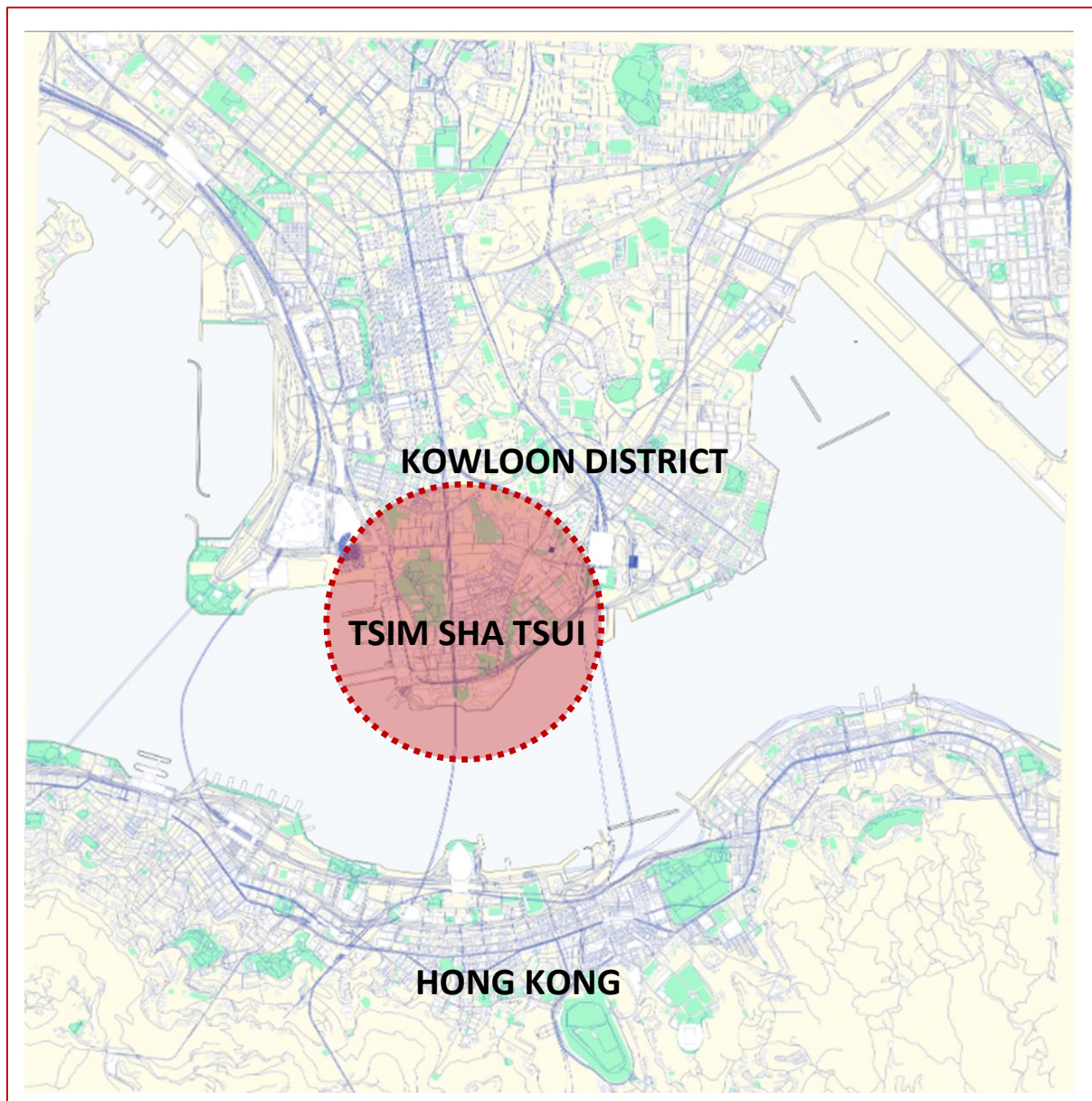
Kowloon district is one of a historical district in Hong Kong (see Figure 1). There are some historical buildings within this area which represented victorian architecture with redbricks and big columns. This area has been regarded as the busiest district in Hong Kong, since that this area has been regarded as a central district in Hong Kong. One of the area within Kowloon district is Tsim Sha Tsui, which has a significant character of buildings and atmosphere. There are some particular plots which represented the historical area of Hong Kong. They are Mongkok Ladies Market, Kowloon Park, Former Kowloon British School, St Andrew's Church,

Park Lane Shopper's Boulevard, Kowloon Islamic Center, Hong Kong Heritage Discovery Center, Avenue of Stars, Hong Kong Museum of Arts, Hong Kong Space Museum, Hong Kong Cultural Center, Clock Tower, 1881 Heritage, Harbour City, and Canton Road/ Peking Road. Those buildings and areas are having significant character as well as uniqueness architecture.

As a part of urban areas in Hong Kong, Kowloon has a main station known as Kowloon Station. This main station has connected to the other side of Hong Kong island and to the airport. This main station has been planned and designed significantly as a transit point for all public transport in Hong Kong including MTR, buses, and trams. Kowloon area is not only for transit point, but also has been planned and designed with a Transit Oriented Development concept which provide mixed-use buildings within the area. The buildings consist residential as well as commercial function. The residential function has accomodated not just for all population in Kowloon district, but also including immigrant and tourists. The commercial function within the area have been provided to accommodate the need of the local community as well as the visitors (immigrant and tourists).

The area of Kowloon has been planned and designed as compact as possible to accommodate all the need of the community. The accesses for pedestrian and bikers have been provided along the street in Kowloon District. Figure 2 and 3 show the pedestrian lines and bicycle lines within Kowloon District. Almost all primary street particularly at Nathan Road, has provided pedestrian ways and bicycle ways. Both facilities are to fulfill the basic principle of Transit Oriented Development concept walking and cycling.

Figure 1: Kowloon District as a part of Hong Kong



By providing the facility of pedestrian ways and bicycle ways for all resident within the area as well as visitors (immigrants or tourists), all people have been encouraged to do walking or cycling. This condition will make the concept of Transit Oriented Development succeeded.

Figure 2 and 3: Pedestrian way and bicycle way in the Kowloon District, Hongkong



To make the implementation of the concept of Transit Oriented Development succeed, the urban planner should provide an excellent plan for the area. Two other basic principles of Transit Oriented Development are connecting and transitting. To encourage people in making the concept succeed, there should be a facility which connecting from one facility to another one as well as from one function to another one. Within an area which implement the concept of Transit Oriented Development, a network of road, street, path, and pedestrian way should be connected one to another. This network will connect from one function (commercial function) to another function (residential function or recreation function). Although, this area also should provide a transportation system which could connect this district to another district easily, comfort and safe. Moreover, to fulfill this idea, there should be a transit system within the area, thus the function of transitting could be delivered completely.

Figure 4 and 5: The principle of TOD for connecting and transitting

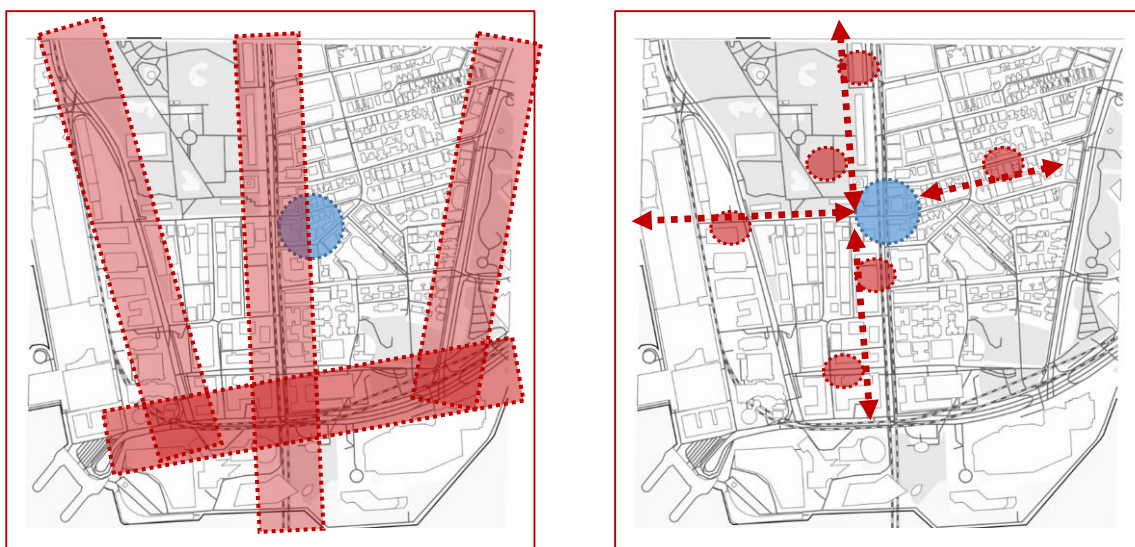


Figure 4 and 5 show how Kowloon District in Hong Kong has a connecting facility to relate one function to another within the area. Also, there is a transitting facility which has been provided as a MRT Station (Kowloon Station). This transportation system will transit all the people from Kowloon District to another district in Hong Kong easily, comfort and safe.

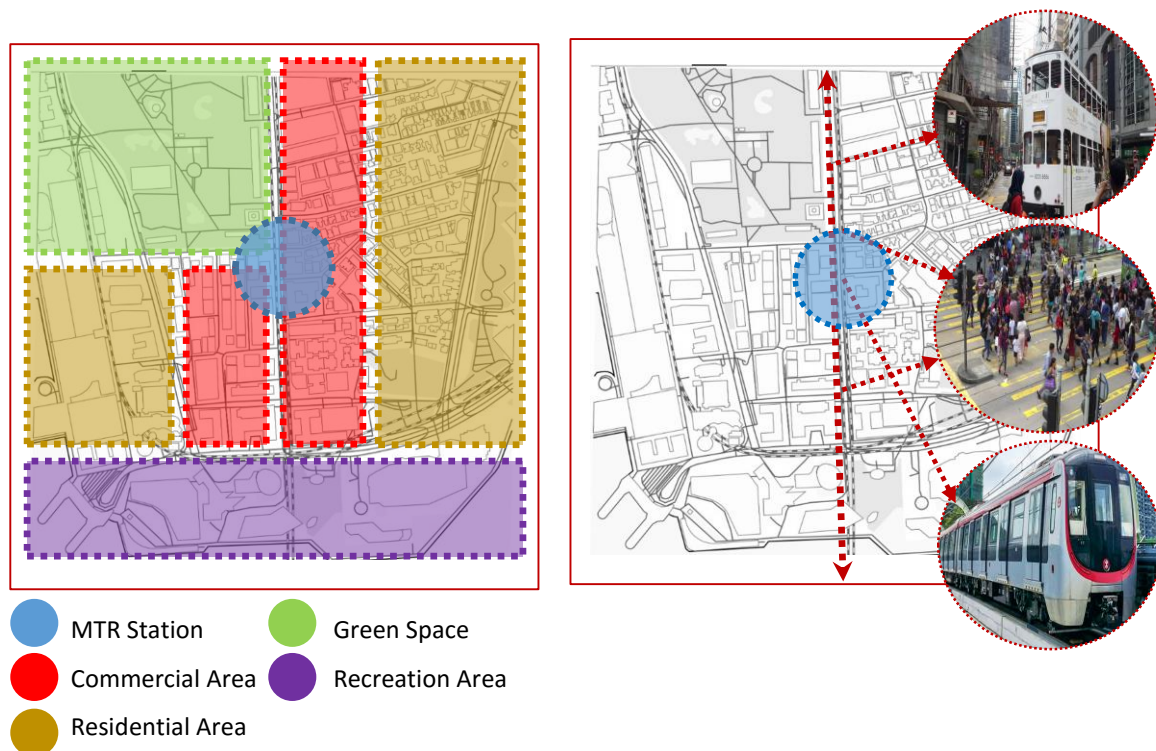
Figure 6 and 7: Various function and activities within district are mixing and densifying the area



Figure 6 shows the various function and activities within Kowloon District. The differences of function and activities have been shown with colours. Red colour shows the commercial areas within Kowloon District which have been provided along the Nathan Road. Residential areas have been shown by brown colour which are located behind the commercial areas as well as upper the commercial areas. This is because some of the buildings within Kowloon District are mixed-use which consist commercial activities and residential activities. In the middle of Kowloon District, there is a central spot of transit facility which is known as Kowloon Station of MTR Station, which is shown by blue colour. And finally, the last function and activity is a recreation activity, which is shown in purple colour. This area consists some museums and pedestrian for visitors. This area is well known as a park along the water area named Avenue of Stars.

To make an excellent plan and design for Kowloon District, the urban planner has provided a mixed-use building to accommodate the population of Kowloon which has been regarded relatively high density. This condition has encouraged the urban planner to deliver a concept which implemented in densifying the area become livable for all people. To fulfil this condition, some of the residential building has been designed vertically as an apartment or condominium. Figure 7 shows how the buildings within Kowloon District have been designed to densify the need of the area.

Figure 8 and 9: the basic concept of compacting and shifting in Kowloon District



The two last basic principle of the concept of Transit Oriented Development are compacting and shifting. Figure 8 shows how the Kowloon District as compact as it is, all the functions and activities within the area have supported and related each other. People could reach everything their need in one area from residential, commercial, recreation even the transportation system which could transport and deliver them to another place from Kowloon Station. From the first basic principle to the seventh basic principle, it could be concluded that all the basil principles could be completely fulfilled when all the people could shift their routinity and activity by using public transportation such as MTR, Tram or even by walking distance using pedestrian ways within Kowloon District (see Figure 9).

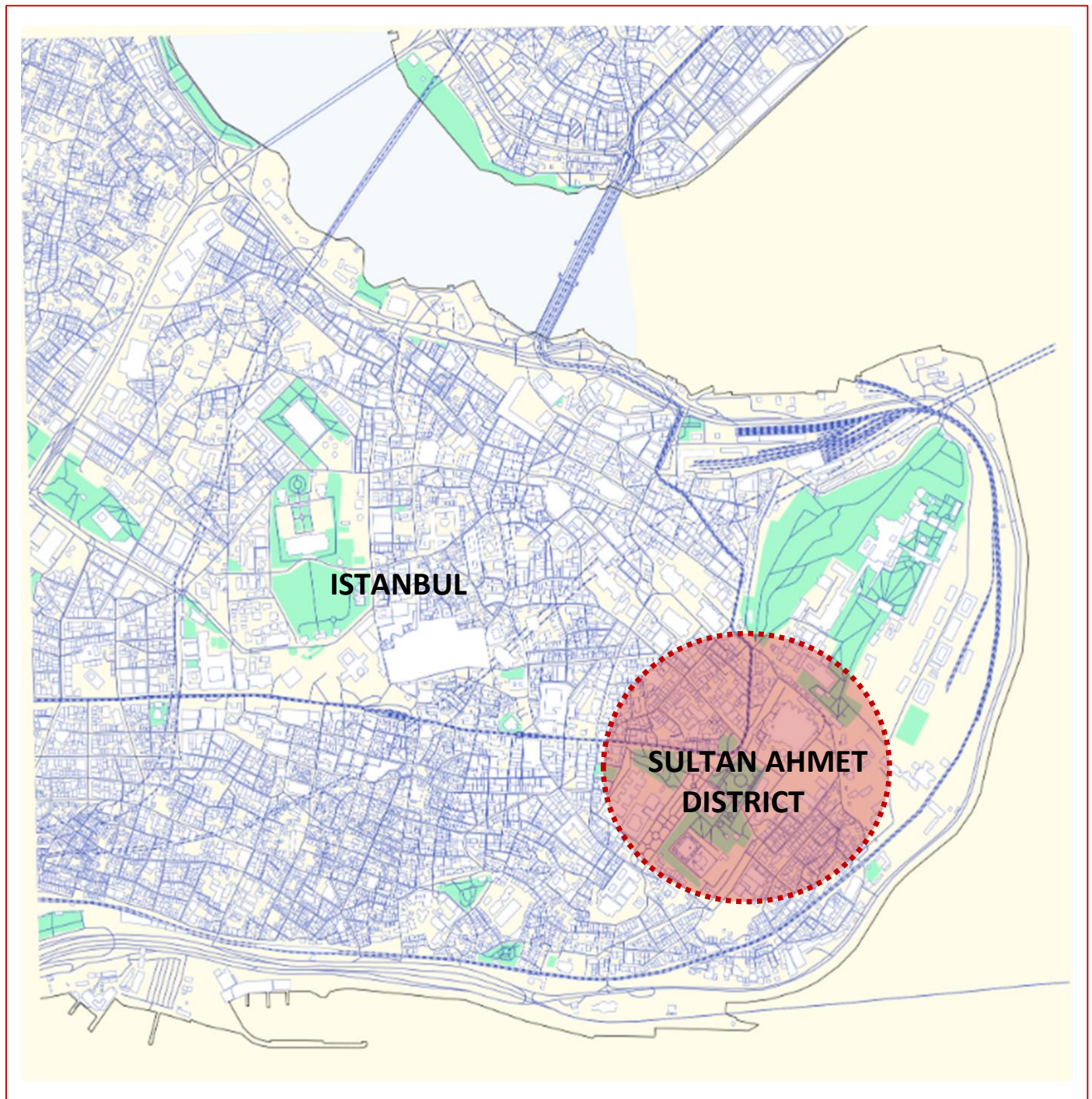
1.2. Istanbul Historical Area of Turkey

Istanbul which has been known formely as constantinople, is a city with a historical character. Istanbul is a city with a strategic location in Euroasia, because the city has been separated with Bosphorus Strait between Asia and Europe. The Europe side consists the historical sites an commercial center which have been known very well by tourists. And the Asia side is a suburban area which is about 30 % of the population live in this area.

The population of Istanbul is not as large as Hong Kong, but in Europe, the population of Istanbul is the fourth largest cities in Europe. There are also many immigrants start to live in Istanbul either to work or to study. The city itself has a unique character particularly in architectural. Many buildings have a historical value either intangible or tangibel values. A lot of tourists came to Istanbul to see the beautiful of the city and the historical behind the city.

One of the historical site in Istanbul is Sultan Ahmet District (see Figure 10). This district consists many historical buildings and the history of Istanbul behind it. Hagia Sophia which used to be Church and transformed to Mosque, Blue Mosque which is located across to Hagia Sophia, Grand Bazaar is a big market in Istanbul, Basillica Cistern which had been used as a water reservoir and many historical building around the district. Those historical buildings are represented the character of Istanbul and the history of the city.

Figure 10: Sultan Ahmet District as a part of Istanbul



To provide comfort and safe for users (local community, immigrants, and tourists), the Local Government as well as the Central Government of Turkey have delivered a concept of good planning within the district. Although, they are never established and mentioned it as a concept of Transit Oriented Development, but when we have explored and analyzed it, the district of Sultan Ahmet could be said implement the concept of Transit Oriented Development.

Figure 11 shows the network of the roads, streets and pedestrian ways within Sultan Ahmet District. All the pedestrian ways follow the network of the roads and streets. All the pedestrian ways have been provided for walkers to mobile and move from one place to another one without any vehicle comforly and safely. Although there is no particular bicycle ways for cyling, all the bikers could use the pedestrian ways to use their bicycles. Figure 12 shows that the bicycles ways also have the same route and network with the pedestrian ways. Using these two concepts of Transit Oriented Development have defined that the district of Sultan Ahmet at least has delivered two basic principles of TOD.

The area of Sultan Ahmet District is very user friendly. All people could just use the public transport to get to the location, and use the pedestrian ways to walk from one historical building to another one, or from one point of interest to another one, as well as from one historical site to another one. The familiar and popular public transport in Istanbul is a tram. This tram could accommodate many people, from their home to their work or from one place to another one. The tram itself also delivers people to the interesting places in Istanbul which have been designated as a historical site or historical district in Istanbul (see Figure 13 and 14). Figure 13 shows how the transportation system in Istanbul which is in this case is a tram. This tram has connected between one district to another one. The station of the tram in Sultan Ahmet District known as Sultan Ahmed Station. From this station, all people could continue their journey by walking distance within the area. This tram station could become a transit point in this area.

Figure 11 and 12: the basic concept of walking and cycling in Sultan Ahmet District

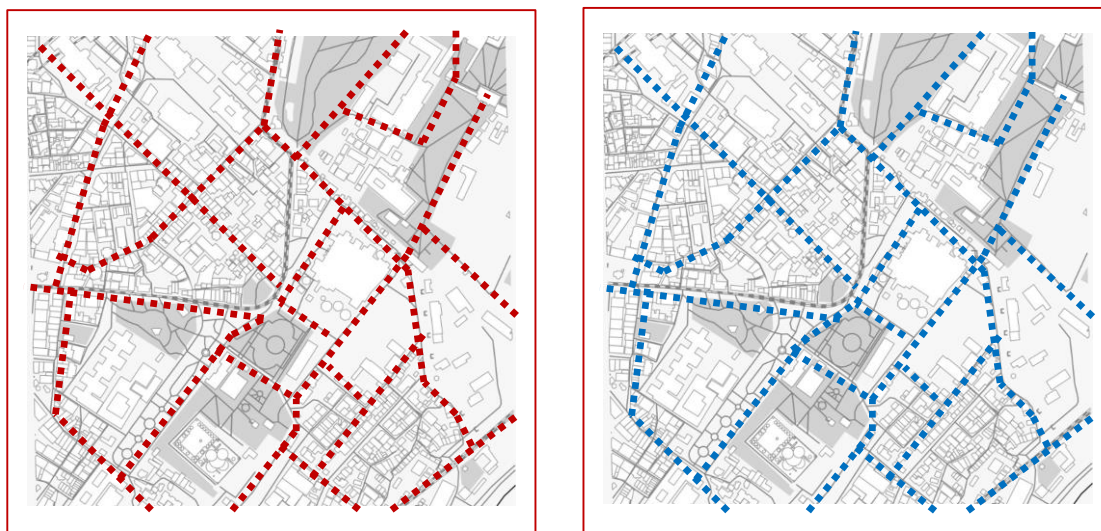
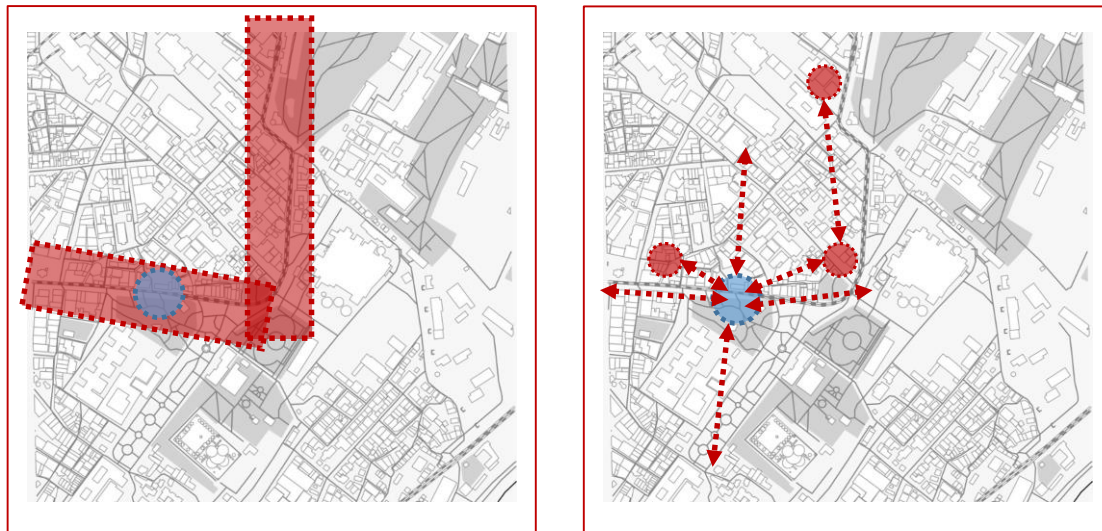
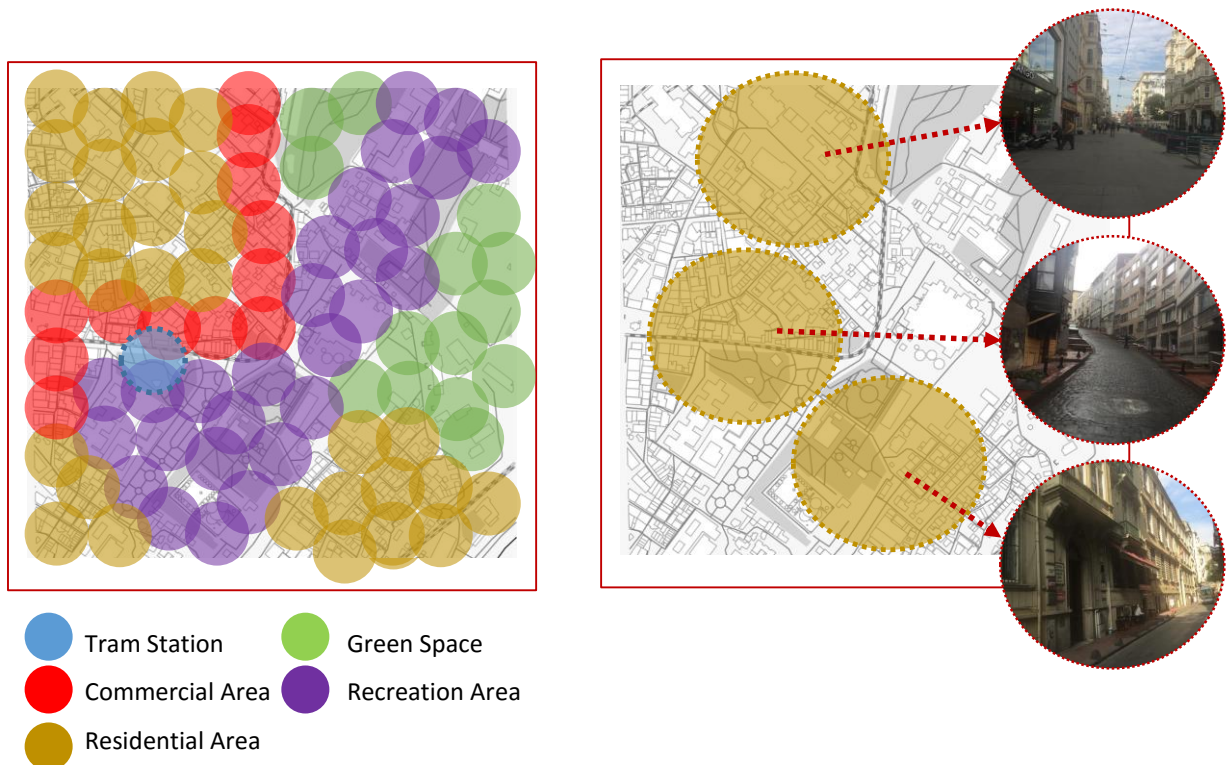


Figure 13 and 14: the basic concept of connecting and transitting in Sultan Ahmet District



As a diverse city, Istanbul has a unique character in architectural, as well as in Sultan Ahmet District which is very well known as a historical site of Sultan Ahmet. This district has a various zones with many function and activities within it. From commercial, residential and recreation for tourists. Almost all commercial activities in this area have supporting the activities of recreation within the district. Figure 15 shows how the zones within Sultan Ahmet District have various function. There are at least four functions within this district: commercial area, residential area, green area and recreation area. All the functions are mixing together and accommodate all the need of the local community as well as the visitors.

Figure 15 and 16: Various function and activities within district are mixing and densifying the area



- Tram Station
- Commercial Area
- Residential Area
- Green Space
- Recreation Area

Figure 16 shows some residential buildings in Istanbul particularly within Sultan Ahmet District. Although the population of Istanbul relatively is not as high as Hong Kong, the Local Government is willing to densify the population by accommodate all in the vertical housing. Some of residential building within Sultan Ahmet District are vertical housing for about 3 to 5 floors, it is not as high as vertical housing in Hong Kong.

Figure 17 and 18: the basic concept of compacting and shifting in Sultan Ahmet District



Figure 17 and 18 show how the two basic principles of the concept Transit Oriented Development has been implemented in Sultan Ahmet District. Although the Local Government of Istanbul is not willing to deliver the concept of Transit Oriented Development intentionally, but from all the analyzes above could describe that the District of Sultan Ahmet which has been known as historical site, could be defined as a district which has implemented the concept of Transit Oriented Development. Although the transportation system which deliver all the community is not as complex as Hong Kong, but still this transportation of tram has been considered as a system that has adopted a concept of Transit Oriented Development.

5. Conclusion

From the two precedent studies, it could be understood that the concept of Transit Oriented Development could be delivered within metropolitan cities, particularly which have a historical area within it. Kowloon District shows the well-planned of the implementation of Transit Oriented Development with high-complexity of transportation system consists MTR, Tram, and Bus Rapid Transit. On the other hand, Istanbul with a historical area of Sultan Ahmet District shows that the Local Government is willing to plan the area with an excellent design, and as a result it could be defined that the district has implemented the concept of Transit Oriented Development intentionally. Each basic principles of the concept of Transit Oriented Development have been explored and analyzed one by one to see the effectiveness of the implementation of TOD.

To conclude this paper, we can deliver a statement that by implementing a concept of Transit Oriented Development, it could create an integrated area with a specific character which provides accessibility for pedestrians and bikers, transit for public transportation as an effort to enhance the quality of the environment to be more comfortable, safe, attractive and sustainable.

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References

- [1] Madgin, R. (2013). A Role for Emotional Value and Place Attachment in the Decision-Making Process. How should decisions about heritage be made?. Arts and Humanities Research Council. England.
- [2] Taki, HM and Maatouk, MMH. (2018). Promoting Transit Oriented Development Typology in the Transportation Planning. Journal of Communication in Science and Technology, Volume 3 Number 2, 2018, pp. 64-70.
- [3] Purwantiasning, AW. (2017). Understanding the Concept of Transit Oriented Development Through Proposed Project of Manggarai, Jakarta Selatan, Indonesia. Proceeding of International Seminar and Workshop on Urban Planning and Community Development. Jakarta, Indonesia. Pp. 63-74.
- [4] ITDP. (2017). Transit Oriented Development Standard 3rd Ed. Institute Transportation and Development Policy. New York.
- [5] Gleave, SD. (2009). A Guide to Transit Oriented Development (TOD), Draft Final Report, Sacramento Regional Transit. Sacramento, United State.
- [6] Rahmat, A. Endot, IR. Ahmad, Z. Ishak, Z. Ibrahim, CKI. (2016). Development of Transit Oriented Development Model for Malaysia. Journal of Built Environment, Technology and Engineering, Volume 1 September 2016.

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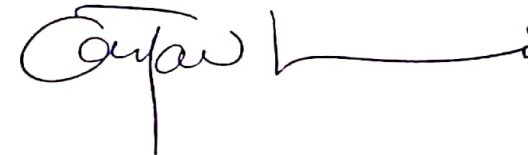
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