Coworking Space and Cluster Spatial Relations in the Context of Jakarta City Spatial Structure

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Abstract. Y generations, or better known as the millennials, are currently the most significant addition in work place. Globalization and industry 4.0 development are the biggest external factors that shaped their character. Both of them has changed the way millennials live as a part of the society. This characters are reflected in the work place in a form of collaborative work. It is becomes the main reason why coworking spaces are now a global trend. Coworking spaces exist as a manifestation of millenials adaptation in occupying work place. With its shared-knowledge based system as the main concept, coworking spaces need a certain proximity with one another. It has an impact on coworking spaces distribution that tends to concentrated in a certain area, particularly in existing industrial cluster. This phenomenon is often called agglomeration economies or spatial clustering. The emergence of coworking space and the phenomenon of agglomeration are most likely occurred simultaneously in urban environment. It is also occurred in Jakarta. However, it is still in its early development compared to Silicon Valley. Reflect on that successful cluster and based on current development studies on agglomeration economies, this paper will discuss about coworking space and cluster agglomeration process, relation, and potential capacity which will be integrated with Jakarta spatial structure current condition. The results will indicate the city structure adaptation towards cluster development and give depiction to foresee its future development possibilities.

Keywords: Coworking space, Cluster spatial, Jakarta city, Millennials.

1. Introduction

Globalization and rapid technology development have affected millennials to have a different perspective on how the world works. Those perspectives are reflected in the work place in the form of equal relationship and co-decision making [1]. The old style concept of working, turns out, is considered as unsuitable for most of the millenials. For this reason, millennials prefer to create their own opportunity by starting a new business. They are known as startups. The process to develop a new business is not easy for them. The biggest challenge that they usually face at the initial stage of their career is financial issue. The rent price of most conventional work spaces are far too expensive for them. Moreover, the physical layout of convenient work space itself also unsuitable for their work style. For this reason, coworking spaces emerge as a new work space style that adjust to startups capabilities and needs.

A predecessor of coworking space, workspace sharing, has actually existed since 1995 [2]. However, coworking space itself was established in 2005 in London and since then has rapidly increased until now [2]. Accordingly, coworking space is considered as a significant addition in urban area. Its presence has its own spreading pattern in urban area. These one particular feature of coworking space is actually similar with the convenient work place. There is two main contrary forces,
agglomeration and dispersion, that compel coworking space to be located on particular urban areas. These forces are discussed in a study called economic geography—agglomeration economies to be more specific. Agglomeration economies is commonly defined as a phenomena in which economic activities are concentrated in particular urban areas. It has compelled firms to get close to each other. As the result, this process has created a concentration of firm which is known as cluster.

The concept ‘Internet of Things’ (IoT) in this industry 4.0 era, has changed the way that cluster developed. One of the significant change is the shift of focus from industrial cluster to sharing economy oriented development [3]. Many clusters are now developed in that direction. The result of this process is manifested in the form of coworking space. Coworking spaces also have the tendency to concentrate in particular urban area in the same way cluster is formed. As a point of fact, coworking space commonly emerge in the existing area of cluster.

Coworking space is still considered as a new phenomenon in many cities. However, it can not be denied, the significant amount of it has influenced city development. Coworking space has been an addition to urban social infrastructure element and potentially create connection and collaboration between human, idea, and place [4]. Its capability to support millenials to develop creative and innovative industries, is very important for city development. In addition to this statement, Moriset also stated that creative individuals and innovation industries have a prominent role as key drivers of city economic growth and sustainability in this era [5].

The number of coworking spaces has increased globally. It is also occurred in Jakarta. There, coworking space has reached 33% occupancy of work space with 77.345 sqm total space area [6]. On the other hand, Silicon Valley appears as one of successful clusters in the world. Reflect on that cluster and related theories, this paper will analyze and discuss about coworking space and cluster agglomeration process, relation, and potential capacity. The results will indicate how city spatial structure adapts to cluster development. By understanding current cluster capacity, its utilization can be improved for further regional development.

2. Literature Review

2.1. Agglomeration Economies

Agglomeration economies is a main approach in economic geography study. It is commonly used to explain agglomeration and dispersion forces that generate spatial configuration of economic activities. The theory of agglomeration economies is first introduced by Alfred Marshal in 1890. The theory itself has undergone through many changes and adaptations related to time and spatial contexts. Agglomeration economies can be occurred in various kind of urban area conditions. Their occurrence are visible through physical manifestation in urban area. The common form of the manifestation is city economic growth disparities in particular country, the emergence of IT based industrial complexes, and the formation of city’s regions that differ in size [7].

Agglomeration economies is generally divided into two different types, that is urbanization economies and localization economies [8]. The result of urbanization economies process is the existence of differentiation in city’s area and economic growth disparities. Meanwhile, urbanization economies is resulted in the formation of industrial complexes, which one of them is cluster. Both localization economies and urbanization economies have a different ways on affecting the city formation

2.1.1. Proximity as spatial externalities that form cluster.

Externalities are non-market interactions that also affect agglomeration process. Proximity is one of spatial externalities that plays an important role in cluster formation. According to Porter (1990), quoted from [9], proximity makes interactions between firms more competitive and its operations more effective [9]. Proximity creates assets within a district and generate positive effects in a form of spatial lock-in [10]. As the result, firms are engaged to its concentration area and cluster is formed.
2.2. Cluster and Innovation District

The term ‘cluster’ is first introduced by Michael Porter in 1990 which he defines as industry concentration area [11]. The term itself then develop and now is widely known as location of concentrated interconnected firms and other related institutions and organizations. Industry 4.0 has caused a shift of focus from industrial complexes to coworking space development [3]. As a part of industrial complexes, clusters development is also affected by this shift. Coworking space emerges as an integral component of innovation districts [12]. For this reason, coworking space can also increase cluster potential to develop as an innovation districts.

In this part, the theory of innovation district is sourced from journal report of economic geography by Katz and Wagner [13]. Cluster and innovation district are basically similar in form; however, in innovation district, the existence of startups, incubators, and accelerators are more emphasized. Innovation district integrates economy shaping, place making, and social networking. Katz and Wagner state that these three aspects are common assets in innovation district. Moreover, it is divided into several sub-aspects.

First, economy shaping. This aspect is divided into three more specific sub-aspects which consists of innovation drivers, innovation cultivators and neighborhood building amenities. Innovation drivers is an economic asset that concerns about firms sector. It is also related to the technology used in the production process. Innovation cultivators asset is mainly related to the subjects of innovation district which usually consists of firms and startups and related institutions or organizations. In addition to the previous two sub-aspects, building amenities exists to support main activities by providing services for both residents and workers in the district.

The second one is place making. It is also divided into three sub-aspects, namely publicly-held assets, privately-held assets, and assets that knit together physical urban fabrics. Publicly-held assets are required to enhance connectivity, collaboration, and connection. This sub-aspect is manifested in a form of public place. Public places exist as a platform to infuse innovative spheres in locals daily life. It should be digitally accessible, so public can be easily engaged with the district. This, moreover, will also affect the formation of social networking assets. Privately-held assets, on the contrary, is manifested in a form of privately-owned building. This assets generate positive effects by providing accessible and affordable private place that is configurated with public and work place. Related to previous two assets, physical assets that knit together physical urban fabrics are mainly manifested in form of connecting elements, such as streets, sidewalks, pedestrian and bike lane. Besides that, strategies like removing or lowering the barriers can also be applied. The main purpose of this asset is to create a good connectivity, both within the district and outside with broader areas.

The last one is social networking which divided into two sub-aspects; strong ties and weak ties. Strong ties and weak ties could be occurred if the presence of innovation drivers and cultivators is fulfilled. Strong ties are built from inter-subject connection in similar sector, meanwhile weak ties are build from cross-sector subject connection.

2.3. Agglomeration impact on city spatial structure

City spatial structure, in this research, is referred to Mohan (1994) who defined it as a distribution of urban area activities based on its type, location, and density [14]. City spatial structure, based on its population density distribution, is divided into two models, polycentric and monocentric. In monocentric model, activities are highly concentrated in Central Business District (CBD). The density will decrease as the distance increase from CBD towards the city suburbs. Different from monocentric, in polycentric model, activities are not only concentrated in one area but divided into some new concentrations called subcenter. Polycentric model is basically formed from monocentric model—it is occured when the CBD loose its primacy [15]. The emergence of subcenter is closely related with agglomeration process. Agglomeration economies propel firms to get close to each other and form cluster, which manifestation is subcenter [16]. Subcenter existence is a prove that city spatial structure can change from monocentric to polycentric.
City center (CBD) and subcenter are basically formed through spatial configuration of economic activities. Agglomeration and dispersion forces create equilibrium which resulted in city spatial structure. However, this equilibrium does not always stay in the same condition. Opposite forces can occur and destabilize that equilibrium. Huriot and Thisse claim that opposite forces occur as an after effect of agglomeration. When agglomeration reaches its peak point, future possibilities of agglomeration in the same area will be hindered [7]. In the worst case, it will even turn into a dispersion. For this reason, opposite forces bring about the possibilities of change in city spatial structure, such as urban sprawl, the donut effect, and the emergence of edge cities.

2.3.1. Urban sprawl.

Urban sprawl is mainly driven by population growth in the city. It is occurred when city adapt to that growth by expanding its areas. As a result, there is some areas with a very low population density. Besides that, urban sprawl is also manifested in city in a form of agglomeration economies. Opposite forces, as mentioned before, can turn agglomeration into dispersion. If a population density in one area decrease, wider area will be needed to support economic activities in vicinity and economic activities will be more dispersed [16]. Urban sprawl is usually seen as a negative phenomenon in cities. It increases people travel distance which leads to congestion. However, urban sprawl has also positive impacts on cities. According to Burchell and Mukherji (2003), quoted from Prakasa, Soemardiono, and Defiana (2018), urban sprawl also cause transportation mode to disperse and give opportunities for low to middle class citizen to access city center easily [17].

2.3.2. The donut effect theory.

The donut effect theory is divided into two; the old donut and the new donut. The new donut is basically the development of the old donut which adapt to current city spatial structure condition and issues. The new donut itself is developed by Aaron Renn. Figure 1 shows the illustrations of both old and new donut theory. As it is presented in Figure 1, in the old donut theory, suburbanization is occurred and decrease the population density—of both employment and activities—in downtown or city center. Meanwhile, in the new donut theory, the density remains high in city center and collar counties or the suburban areas shows its development to become a new center which also indicates the emergence of edge cities.

2.3.3. Edge cities.

The concept of ‘edge city’ is first introduced by Garreau (1991) which briefly can be defined as an agglomeration in rural areas [18]. It is closely related with other phenomenon such as urban sprawl and decentralization. Edge city is also considered as a new form of urbanization [19]. It can be seen in a form of communities that cluster together around big firms or companies outside the CBD [19]. In
many cases, edge city initially triggered by developer company’s project which makes former empty area more liveable and attractive.

3. Learning from Silicon Valley

The discussions about cluster are inseparable from the existence of Silicon Valley as one of the most successful cluster. Silicon Valley presence has a strong influence in San Francisco Bay Area because it has the second biggest employment size after San Francisco [20]. Despite the existence of popular institutions and firms, Silicon Valley development process are occurred autonomously. This statement is supported by its historical facts since the location first known as the birthplace of semiconductor company named Fairchild Semiconductor in 1956 [21]. Silicon Valley is actually a big cluster that covers Santa Clara Counties. The counties consists of three cities; San Jose, Santa Clara, and Sunnyvale. Out of those three cities, San Jose is the most developed cities. It is ranked as the third most innovative cities in Innovation Cities Global Index 2018 on Business Insider (www.businessinsider.com). In San Jose, activities are centered in its CBD area called Downtown San Jose. This area is also the densest location for coworking space. Coworking spaces there create a pattern where it is highly concentrated in downtown area and then scattered towards the suburbs.

Concerning its development as an innovation district, Downtown San Jose basically have all the assets as mentioned earlier in the theory of cluster and innovation district. Figure 2 shows the integration of physical and economic assets in the district. Connectivity in this area is supported by its accessibility which one of its implementation is the availability of public transportation. Light Rapid Transit (LRT) is used to connect the area with its surroundings, meanwhile Downtown Area Shuttle (DASH) exists to support mobility in the area. There are also many public parking lots located near LRT and DASH stop (Figure 2) that ease the shift from public to private transportation mode and vice versa. As it is shown in Figure 2, there is no particular zoning between publicly-owned and privately-owned building. Both of them are scattered mainly around LRT and DASH line. In addition to previous two assets, subjects in this area—startups, firms, government and university—also plays an important role in creating social networking assets. Both strong ties and weak ties are also implemented well there.

![Figure 2. Economic and physical assets of Downtown San Jose.](image)

4. Research method

The method of this research includes literature studies on agglomeration economies and theory related to proximity, cluster, innovation district and city spatial structure. In addition, observation towards the distribution of coworking space and cluster is done by mapping method to see its relation with city spatial structure. This research focus on how coworking spaces and clusters occupy urban
area and what is the impact on city spatial structure. The goal of the research is to find out how related theories are implemented in the spatial context and what is the future possibilities of that development based on theories and existing condition. The case study will involve Jakarta City, which will be observed from micro to macro scale range. The micro scale observation will cover cluster area where coworking spaces are mostly agglomerated. It will be analyzed through its economical and physical assets to see potential development within the cluster itself. The macro one will cover the city and its surrounding areas (suburbs). The analysis will be based on coworking spaces and clusters spreading in current city spatial structure. The results, from both micro and macro analysis, will be integrated to see how clusters development affect city spatial structure and to foresee future development possibilities.

5. Results and discussions

5.1. Jakarta City spatial structure

As the Capital City of Indonesia, Jakarta is generally divided into five administrative cities, namely East Jakarta, West Jakarta, Central Jakarta, South Jakarta, and North Jakarta. Looking back through its history, Jakarta City spatial structure was originally developed in monocentric model. The CBD, which is also known as ‘Golden Triangle of Jakarta’, extends from Central Jakarta to South Jakarta marked by three main roads—H.R Rasuna Said Street, Jenderal Sudirman Street, and Jenderal Gatot Subroto Street. Because it has been established as center of activities, the CBD remains to have the highest density of activities in Jakarta until now. However, as the city develops, other areas evolve as a potential location to become a subcenter. Some of these areas emerge in the form of superblock. The emergences of subcenter is one of a proof that Jakarta is now developing in polycentric model. This statement also strengthened by city spatial plan called Rencana Tata Ruang Wilayah 2030 (RTRW 2030), which will be city planning reference from 2011 to 2030. Spatial configuration of city center and subcenters which are presented in Figure 3. As it is shown, Jakarta city has developed many potential new centers, which indicates its development towards polycentric city.

5.1.1. Superblock as a contextual form of cluster.

The implementation of cluster in Indonesia is slightly different from its theory. The term ‘cluster’ itself in Indonesia is referred to residential areas that built by land developer and have conformity in each design. In Jakarta (Figure 3), superblock exists as a more comparable implementation towards cluster. Superblock in Indonesia is defined as an area (or district) that is built and laid out, by maximizing its land use, with certain boundaries in the city [22]. Although it is not specifically referred to industrial area, it has the closest resemblance to what cluster is defined in the theory. Similar to cluster, Jakarta’s superblocks also have main purpose as city’s productivity center that integrate firms, institutions, organizations, and other relevant subjects.
5.2. Coworking space and superblock distribution relation

Similar to San Jose, coworking space in Jakarta is highly dense in CBD and surrounded area and the density decrease towards the inner suburbs. Figure 4 below shows that coworking space distribution in Jakarta is still oriented by the CBD. This distribution, in fact, shows that coworking spaces are basically adhere to existing work place location, which most of them is superblock. It is the result of agglomeration process in which spatial lock-in appears as agglomeration force that attract coworking space to concentrate in certain areas. On the other hand, the flexibility of coworking space appears as dispersion force that allows coworking space to stands alone and exists separately apart from the CBD or superblock. As it is shown in Figure 4, coworking spaces in Jakarta are more inclined towards agglomeration rather than dispersion. Besides the existence of existing physical assets, coworking space concentrations in superblock are also driven by society’s entrenched perspective who sees certain areas as a prestigious location.

Coworking space as a new emerging phenomena is also shown in Figure 4 through its occupancy. In the existing area of work place location (CBD and superblock), most of coworking spaces occupy shared owned building. Coworking spaces in single-owned building are mostly found in other areas. It shows that coworking space adapts to city built environment. Existing work place area is highly dense and already fully built, so coworking spaces adapt to that condition by occupying existing building.
On the contrary, other areas are not fully developed, so coworking space have more flexibility to occupy a single-owned building.

Figure 4. Coworking space and superblock distribution in Jakarta.

5.3. Coworking space agglomeration in superblock

There is three superblocks where coworking spaces are most agglomerated; Mega Kuningan superblock in CBD area, Sudirman Central Business District (SCBD) near CBD area (inner ring), and Podomoro City in inner suburb area. Comparing those three superblocks, based on their area size, Mega Kuningan is the largest, followed by SCBD and then Podomoro City as the smallest. As a subcenter, three given superblocks will be observed as a micro scale range area to see its relevancy with Silicon Valley and to analyze its assets as a potential future innovation districts.

5.3.1. Mega Kuningan

Figure 5 shows the integration of economic and physical assets in Mega Kuningan. This superblock has its own collector road as the main access which distribute the traffic from and to arterial road. There is three arterial road that integrated with the superblock—Prof. Dr. Satrio Street, H. R. Rasuna Said Street, Jenderal Gatot Subroto Street. Public transportation called Bus Way to K is provided to accommodate trips around the CBD area, including Mega Kuningan. Other public transportation such as Transjakarta, Metromini, and Kopaja can only be found on the arterial road. Public amenities exist as a minor space in this area. As it is shown in the building function mapping in Figure 5, besides The
Bellagio Mall, all amenities are incorporated into residential or office buildings. It tends to be more personal because it can only be used by the occupants of the building. This is one of the reasons why Mega Kuningan is well-known as a gated community. Same as Silicon Valley, there is no particular segregation between public and private area in this superblock. In regard to its connectivity with surrounding areas, Mega Kuningan is integrated by access with middle to upper class residential zones in vicinity. However, social and visual segregation are still occurred. This area is mostly considered as an exclusive area. In addition, lack of public space also strengthen that impression. There is also social-networking issues that make the availability of potential subjects futile. Startups, firms, and other related institution have the tendency to develop independently. Different from Silicon Valley, strong ties and weak ties have not formed yet.

5.3.2. Sudirman Central Business District (SCBD).

Figure 6 shows the integration of economic and physical assets in SCBD. Similar to Mega Kuningan, this superblock has also its own collector road. There is main arterial road that integrated with the superblock, it is Sudirman Street. Public transportation such as shuttle bus is provided in both arterial and collector roads. However, mid-distance transportation such as Transjakarta is only provided in Sudirman Street. Regarding the existence of amenities building, as it is shown in the building function mapping in Figure 6, amenities in SCBD are mostly exist as an individual public space. For this reason, SCBD is known as a more inclusive area than Mega Kuningan which amenities are mostly included in privately-owned building. Similar to Silicon Valley and Mega Kuningan, there is no particular segregation between public and private area in this superblock. This area also has a good connectivity with its surroundings in which governmental zone, residential zone, and commercial zone is included. SCBD, as described in this part, is basically have all of the economic and physical assets of innovation district. In addition, there is also various potential subjects, namely startups, firms, also private and public organizations. Despite the existence of innovation drivers and cultivators,
different from Silicon Valley, social networking assets has not well developed yet there. Moreover, social segregation is also occurred as the superblock is basically targeted middle to upper class.

Figure 6. Economic and physical assets of SCBD.

Figure 7. Economic and physical assets of Podomoro City.
5.3.3. **Podomoro City.**

Figure 7 on the previous page shows the integration of economic and physical assets in Podomoro City. Similar to SCBD, this superblock also has its own collector road as the main access. There is two arterial roads that integrated with the superblock; Letjen. S. Parman Street and Tanjung Duren Raya Street. Different from SCBD, in this superblock, public transportation can only be found on the arterial roads. Therefore, online transportation is frequently used as the main transportation preference. Central Park building, existence as the superblock’s landmark, indicates amenity buildings domination in the superblock. Different from The Valley and SCBD, in Podomoro City, public and private area is indistinctly segregated. This is manifested in privately-owned and publicly-owned building location as it is shown in Figure 7. Public buildings are located closer to the arterial road. On the contrary, private buildings, such as apartment, are located inward the superblock. As for the connectivity, this superblock is spatially segregated from vicinities. There is no direct access to surrounding areas, including Taman Anggrek mix-used building. From its economic and physical assets analysis, it can be concluded that Podomoro City has less potential assets than SCBD. It is lack of connectivity and, similar with SCBD, has not developed the social networking assets yet.

5.4. **Impact on city spatial structure**

Figure 8 below shows that superblock development has reached suburban area. Cluster in South Tangerang and Bekasi that shown in Figure 8, indicate the emergence of edge cities in Jakarta surrounding areas. Edge cities exist as an adaptation towards population growth. This fact indicates the occurrence of other phenomenon, urban sprawl, which also supported by the fact that there is density disparities in some areas of the city. Furthermore, both phenomenon could be the main driver in changing the direction of city development towards the new donut effect. Economic activities are highly concentrated in CBD and have the tendency to stay in the same condition in the future. This statement comes from the fact that the continuity of CBD primacy is supported by two main strong factors; concentrated firms spatial lock-in and the city future planning based on RTRW 2030. With edge cities occupancy in suburban areas and the continuity of CBD as center of activities, the inner suburbs have a big potency to appear as the lowest density area. However, it has not happened yet, so the new donut effect currently remain as a possibility.

6. **Conclusion**

Coworking space distribution in Jakarta is mainly driven by agglomeration forces from existing firms concentration spatial lock-in and dispersion forces from its flexibility. As the result of these two opposite forces, coworking space are highly dense in CBD area and have the tendency to be more...
scattered towards the suburbs. This pattern is also the result of coworking space adaptation towards the city existing spatial structure. In fully-developed area, such as the CBD and superblock, coworking spaces mostly occupy shared-owned building. On the contrary, in other areas, coworking spaces tend to occupy a single-owned building. About the implementation of innovation district, superblock in Jakarta in fact, is not ready yet to develop in that direction. The presence of required assets is actually fulfilled, but its utilization has not been maximized. The biggest issue lies in social networking and connectivity assets. Firms, startups, and organization usually work as a single different entity, so its development has no connection with one another and the superblock itself. As the result, social networking formation is hindered. As for connectivity assets, Mega Kuningan and SCBD has already built a spatial connection with its surroundings. However, social segregation is still occurred in both superblocks and Podomoro City. The fact that superblock originally established for middle to upper class, has made an impression of an exclusive area or gated community. Coworking space indeed emerges as integral component of superblock. However, it is still in early development, so the effect is still insignificant to resolve existing issues.

Regarding the possibility of change in city spatial structure, superblock development has caused the emergence of edge cities. This fact also indicates the occurrence of urban sprawl and future possibilities on the new donut effect implementation in Jakarta. As the research come to the conclusion, Jakarta’s future possibilities are more depicted. This research data collection is still at an initial stage for future discovery on regional planning development. However, the results of this research could be an additional insight for any studies related to Jakarta City development, especially in overcoming existing issues such as congestion and population density distribution.

7. Acknowledgments
This article’s publication is partially supported by the United States Agency for International Development (USAID) through the Sustainable Higher Education Research Alliance (SHERA) Program for Universitas Indonesia’s Scientific Modeling, Application, Research and Training for City-centered Innovation and Technology (SMART CITY) Project, Grant #AID-497-A-1600004, Sub Grant #IIE-00000078-UI-1. The research was funded by Indonesian Ministry of Research, Technology and Higher Education (Ristekdikti) under the scheme of University Basic Research Excellent 2019 Contract No. NKB-1636/UN2.R3.1/HKP.05.00/2019.

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