

Activity-Based Concept Towards Office Building in Jakarta

Melyna¹, Naniek Widayati Priyomarsono², Fermanto Lianto³

¹ Student of Master Program of Architecture, Universitas Tarumanagara, Jakarta

^{2,3} Lecturer of Master Program of Architecture, Universitas Tarumanagara, Jakarta
¹melyna.317221004@stu.untar.ac.id, ²naniekw@ft.untar.ac.id,
³fermantol@ft.untar.ac.id

Abstract. Post-COVID-19 pandemic work activities faced a readjustment, but work activities are now more flexible regarding place and time. Office buildings are a main physical factor in comfort and worker productivity. With an activity-based concept based on the worker's activities, office building configuration is based on the needs of each worker at a time and consists of several types of workspaces. The research uses the multiple case study method to reassess the role of office buildings in current work activities. The design method used is Bernard Tschumi's programming theory. The activity-based concept is structured based on elements of the physical work environment implemented in several types of work areas according to needs, with the most significant space configuration being the facility area. The largest area is the facility area because work activities now also focus on workers' health and comfort, followed by several types of work areas with each of their characteristics according to the activity-based concept.

Keywords: activity, activity-based, office, pandemic, working

Abstrak. Paska pandemi COVID-19 aktivitas kerja menghadapi penyesuaian kembali, aktivitas kerja kini lebih fleksibel tidak terikat tempat dan waktu. Bangunan kantor merupakan faktor fisik utama dalam menghadirkan rasa nyaman dan produktivitas bagi pekerja. Dengan konsep kerja berbasis aktivitas, konfigurasi bangunan kantor terbentuk berdasarkan kebutuhan pekerja pada satu waktu tertentu, serta tersusun atas beberapa jenis area kerja. Penelitian menggunakan metode *multiple case study* untuk mengkaji peran bangunan kantor terhadap aktivitas kerja di masa kini. Metode perancangan menggunakan teori *programming* oleh Bernard Tschumi. Konsep kerja berbasis aktivitas tersusun berdasarkan elemen-elemen pada lingkungan kerja fisik, yang kemudian diimplementasikan menjadi beberapa jenis area kerja berdasarkan kebutuhan, dengan area fasilitas yang menjadi area dengan luasan terbesar. Area terbesar merupakan area dengan luasan terbesar karena kini aktivitas kerja berfokus kepada kesehatan dan kenyamanan pekerja, area dengan luasan

terbesar selanjutnya merupakan beberapa jenis area kerja dengan karakteristik masing-masing berdasarkan konsep kerja berbasis aktivitas.

Kata kunci: aktivitas, berbasis aktivitas, kantor, pandemi, kerja

1. Introduction

Work activities have constantly evolved from past to present; the COVID-19 pandemic became a moment that proves that work activities now can be done from anywhere and are not tied to a specific place or time. Work activities have become more flexible, allowing them to be carried out almost anywhere; hence, office buildings must adapt to stay relevant to current work activities. In 1985, architects Stone & Luchetti expressed the same idea in an article titled “Your Office is Where You Are”, suggesting that in an activity-based environment, various workspace scenarios equipped with different tools and attributes could support diverse work activities within a work environment. The space configuration of this concept could be flexible and easily modified to support technology integration [1]. However, this study has not shown any guidance as to the zoning area or the capacity and characteristics of each area. Therefore, an activity-based concept must be reevaluated, and the office building’s function must be relevant to current work activities, addressing the shortcomings and strengthening its advantages. Only then could we find the indicators that distinguish a conventional work concept from an activity-based concept, which are the primary parameters in designing an office building with an activity-based concept. Program patterns and spatial organization can be found using these indicators, guiding activity-based concept office building.

1.1. Working Activity Definition

The concept of work has existed for a hundred years, intertwined with human history. The definition of work is variable and always depends on the context of use. Work may involve physical or mental activities to achieve a goal, a workplace, a job, or tasks performed by an individual [2]. Work activities consist of organizational tasks that aim to achieve the work itself. The job is a source of job satisfaction, and the status obtained after is crucial to work satisfaction [3]. It is suggested that one’s work relationship is fundamental, and the worker’s attitude towards the job would determine the work’s success [4].

Workers greatly need a comfortable work environment; comfortable means a clean and safe environment. A safe work environment equipped with supporting facilities tends to be preferred by workers because those are a few dominant factors that help workers carry out and complete their tasks and responsibilities. Other factors, such as individual freedom, personal space, and privacy in the work environment, must be obtained through work environment design [5]. Satisfaction levels, stress, productivity, and effectiveness depend on the physical facilities provided within the work environment. The work environment is the main factor in shaping a company’s characteristics [6].

1.2. Work Environment Definition

The work environment consists of various groups equipped with supporting facilities to achieve the company’s goals in line with the company’s vision and mission [7]. The work environment is a process in which various groups interact according to specific patterns, with each group having its characteristics and values about an organization that can’t be separated from the environment in which the organization operates and making people its centre [8]. Generally, the work environment is divided into 2 types: the physical work environment provided by the company and

the non-physical work environment that is not visible and integrated into the company work system, including employee behaviour within the organization. A supportive work environment, whether physical or non-physical, could enhance worker's performance and morale. If workers' performance improves, the company's productivity will increase [9]. The physical work environment is where workers carry out all their activities. The physical work environment includes all workplace conditions that affect workers directly or indirectly [9]. The physical work environment includes spatial layout, lighting, air circulation, workplace safety, and tools.

1.3. Open-Plan Concept

The open-plan concept was first made in Germany in the late 1950s by the consulting firm Quickborner and was called Burolandschaft. The concept was to organize work areas without a physical form of hierarchical arrangement by positioning all employees within one big open work area. The open-plan concept has dominated work environments in various sectors, with the advocacy world stating it enhanced interaction and caters to a collaborative work environment. The absence of interior partitions and rooms generally defines offices with open-plan concepts. This allows the presence of private conference rooms to facilitate discussions, but in day-to-day activity, workers operate within the same area. Although the open-plan concept has advantages, recent research indicates that offices with open-plan layouts could create barriers for company executives to engage in collaborative interactions and affect worker productivity [10].

1.4. Activity-Based Concept

The activity-based concept was first introduced in the book called "The Art of Working" and "The Demise of The Office" by Erik Veldhoen, a consultant from the Netherlands. They are first implemented by the company Interpolis in the 1990s. After a few years, various organizations adopted the activity-based work concept and prioritized the needs of workers by providing space for them to organize and create their work environment based on each need. Activity-based work is a concept that consists of various types of office spaces that workers can utilize according to their respective needs. The concept of activity-based work is then applied to office buildings that are now evolving, as it's considered to accommodate collaborative and flexible working activities. In the book "The Art of Working" by Erik Veldhoen, the idea was to prove that office buildings can be designed based on the activities of their users rather than their roles or teams. This concept was first applied at the insurance company Interpolis in 1995, aiming to create a more convincing image; hence, people would trust the company. This concept was implemented by spatial configuration, which is by positioning managers in areas that are easily visible to customers. Therefore, it can be concluded that the activity-based work concept outlined by Erik Veldhoen prioritizes workers and provides space for workers to create their own space within their work environment according to their respective needs.

1.5. Activity-Based Office Theory

Office with an activity-based concept provides several types of work areas for each different activity, which can be described through 3 design strategies: (1) Multiple types of work areas: aimed to provide workers with the freedom not to have a specific work area, allowing them to move between work areas and to choose work areas according to their activities and needs; (2) Open and transparent spaces: aimed to increase flexibility in space configuration, enhance communication among workers, also reduce operational costs. The largest area is the collaboration space; (3) Design standardization: balance the space; office buildings consist of several teams with different needs that must be accommodated. Through design standardization, this concept would provide opportunities to be adopted in various industries.

2. Research Methods







The research method used is the multiple case study since it's considered suitable. The collective/multiple case study involves selecting multiple cases to present different perspectives on the same problem and find connections between cases [11]. This method involves observation, interviews, and documents or report collection. The case studies consist of several office buildings that used an activity-based concept, namely the Anthura Head Office and the Envases Microonda Corporate Building. Both office buildings utilize the activity-based concept to present an image of flexibility and provide efficient spaces relevant to the current work scenarios.

The design method used involves Bernard Tschumi's theory. Tschumi introduces a unique approach in architecture where space, movement, and events are independent elements that always have new relationships with each other. This approach reveals two forms of architectural practice: first, showing the conventional relationships between sequences, program spaces, and movements, and second, creating new relationships between spaces and events that occur within through de-structuring, dis-programming, and cross-programming [12]. Bernard Tschumi's main concepts are elaborated as follows: (1) Space & event: defines architecture as space for activities. In the Parc de la Villette project, a layered system was used to depict pedestrian circulation in various scenarios. With subsequent layers providing space for sports and commerce; (2) Plan, juxtaposition, overlay: structural forms can be used for activities, as seen in the Le Fresnoy Media Center where stairs, pathways, and platforms are placed between the roof and the auditorium; (3) Vectors & envelopes: spatial envelopes are used to provide activities; (4) Form-concept: form and concept mutually determine each other in interaction, emphasizing concept as the basis of structure.

3. Results and Discussions

Based on previous data, theories, and analysis, the following is the zoning area based on the activity-based concept and its implementation in the office building design. The zoning area is divided into room types and needs, activity types, facilities for each area, and room characteristics. The following elements are obtained to create a comfortable physical work environment (see Table 1). The zoning area results from a case study of several offices with an activity-based concept. Case studies taken are from the Anthura Head Office and the Envases Microonda Corporate Building. These two buildings show that the building configuration is based on the activity patterns of building users. Through a study on an activity pattern, the activity pattern for a company can be found, and spatial configuration can then be conducted. The largest area was the facility area because work activities now also focus on workers' health and comfort, followed by shared, group, and individual work areas. The ground floor is generally more open as it is the primary circulation access to the building and consists of open-space facility areas. An adequate facility area often can't be found in other office buildings; only an office building with an activity-based concept supports this zoning area to cater for activities that support workers' health and productivity.

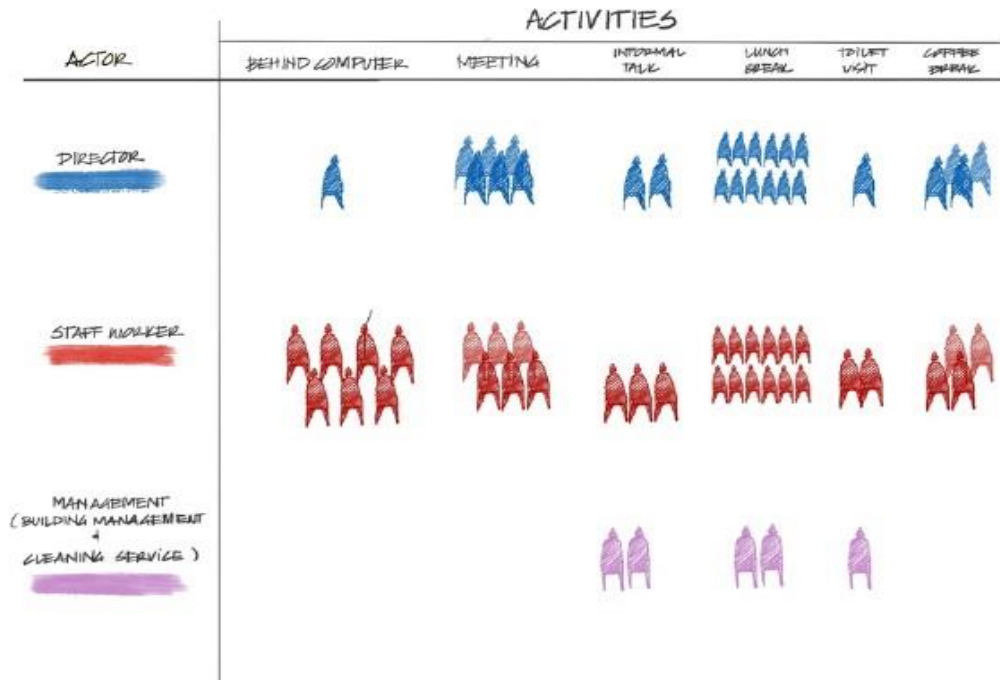
Table 1. Indicators Zoning Office with Activity-Based Concept.

Zoning	Area	Room	Component	Design
1 	Supporting Facility	Toilet, pantry, multifunction room (meeting & sports)	air circulation, lighting (natural & supporting), safety	closed space
2 	Circulation	Corridor & stairs	air circulation, lighting (natural & supporting), safety	open space & closed space, depends on the design
3 	Common Space	Seating area	Air circulation, safety, supporting furniture	open space & closed space, with vegetation
4 	Common Working Area	Common Working Area	air circulation, lighting (natural & supporting), safety, supporting furniture	closed space, transparent partition
5 	Group Working Area (6-12 pax)	Group Working Area	air circulation, lighting (natural & supporting), safety, supporting furniture	closed space, transparent partition
6 	Private Working Area (2 pax)	Private Working Area	air circulation, lighting (natural & supporting), safety, supporting furniture	closed space

At the same time, the following floors are generally more private as they consist of work areas, which are then divided based on the needs and worker's capacity at certain times. The zoning of office buildings with an activity-based concept was conducted using case studies of those offices, further developed using Bernard Tschumi's programming theory. Bernard Tschumi's programming theory is divided into three, and the one used in the design is dis-programming. Dis-programming involves combining two programs where one program contaminates the other program. In office buildings with activity-based concepts, the activities consist of work, social, and recreational activities. Social and recreational activities then introduce a new program to the office building: open space for social activities and an indoor sports area for recreational activities. Work activities are then contaminated by social and recreational activities, shifting the percentage of work area compared to the facilities.

The findings are based on the activity-based concept and the theory of activity-based offices. An office building with an activity-based concept has 3 primary users: directors, workers/staff, and building management (including cleaning service). Each user has different activities: individual groups of 2-6 people and large groups of 6-12 people. They are organized based on several activities: work, social, recreational, and basic needs (toilet visits). Work activities consist of desk work and meetings. Social activities consist of informal breaks, lunch breaks, and coffee breaks. Basic needs activities consist of toilet visits (see Table 2).

Table 2. Room Zoning Office with Activity-Based Concept



Directors tend to engage in activities mostly individually. Group activities occur informally during lunch breaks, coffee breaks, and meetings. Meanwhile, workers engage in group, work-related, and social activities such as lunch and coffee breaks. There are typically 6-8 people for meetings, while for social activities like informal talk, there are usually 2-3 people. Building management also consists of a cleaning service team, which operates before the start of working hours. Analyzing activity patterns provides valuable insights into the behaviour of building users and the types of activities they engage in. By examining the number of people involved in each activity, we can measure the required capacity for each space. Additionally, the various components that shape a space can be considered in determining the ideal layout for each activity.

The research findings and analysis above are critical elements in finding the configuration of office buildings with activity-based concepts. To determine the zoning concept, it's necessary to have a few space scenarios based on worker's activities. The basis for the zoning concept of activity-based can be summarized as follows: (1) Main support facilities: toilets, pantry, prayer room, building management room, and indoor sports facility; (2) Common areas: multifunctional room, open seating areas; (3) Work areas: shared work area, concentration work area, director's room, meeting room.

The zoning consists of 6 areas (see Figure 1). The ground floor is fully utilized as facilities include parking areas, panel rooms, a generator, security rooms, and toilets. Pedestrian access is obtained using Bernard Tschumi's design method, which analyzes the pedestrian layers with several scenarios. The location chosen is on Jl. Tanah Abang II generally follows the same pattern, approaching the position of trees, as they provide shade from the sun (see Figure 2).

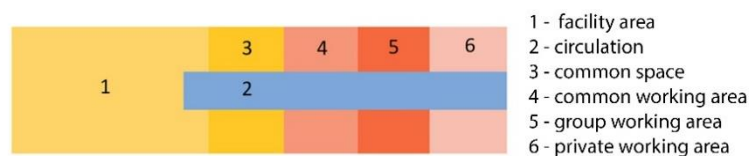


Figure 1. Basic Activity-Based Zoning

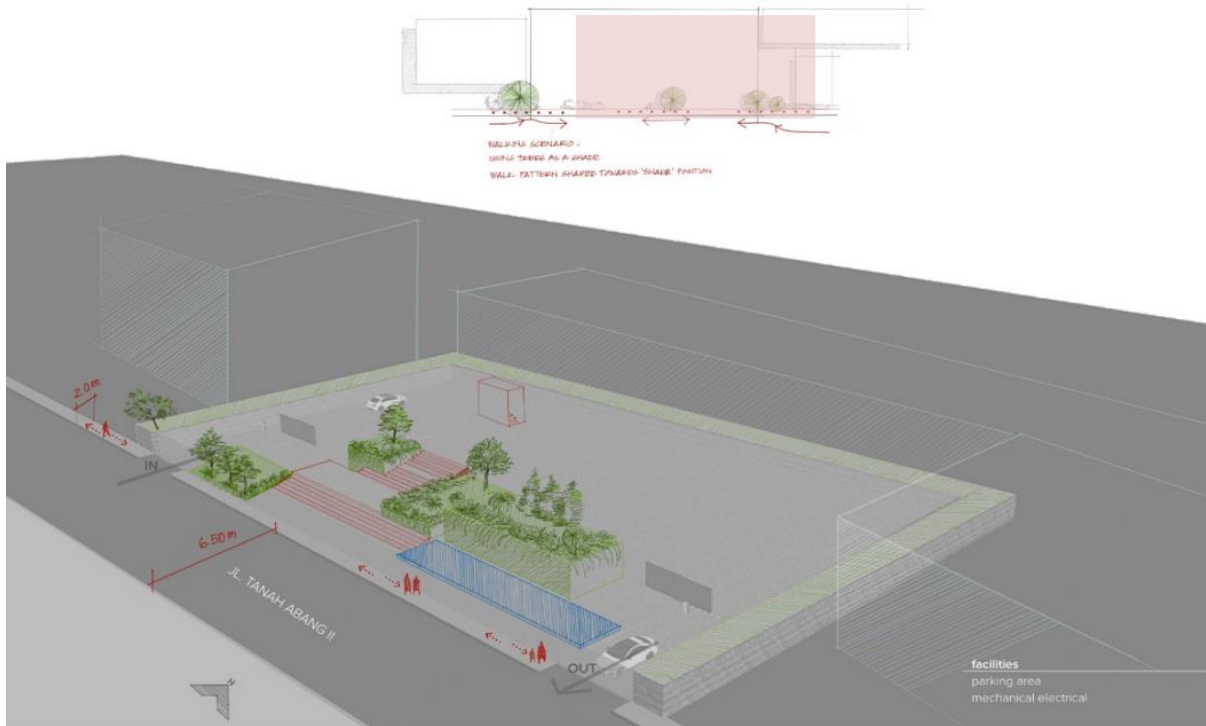


Figure 2. Ground Floor Design Office with Activity-Based Concept

A vertical staircase serves as the main circulation to the first floor, a common space area accommodating social activities for users building. Common space is the first area welcoming visitors into the building, elevated to the first-floor level to contextualize with the surrounding building heights. According to Bernard Tschumi's theory, contextuality is one of the elements in the design process. Therefore, this building must consider contextual aspects with the surrounding heights to maintain harmony (see Figure 3).

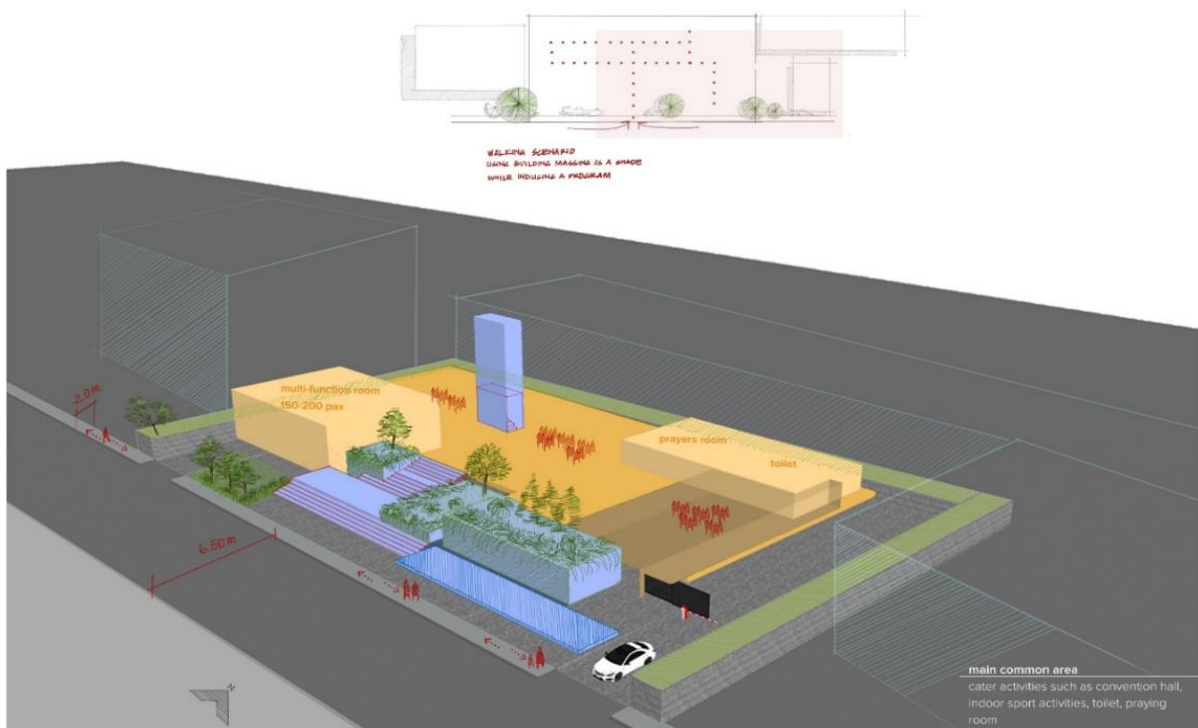


Figure 3. First Floor Design Office with Activity-Based Concept

The first floor consists of common spaces such as an open seating area, multifunctional rooms for indoor sports activities, and large meetings. The circulation pattern on the first floor covers the entire building area to facilitate user activities.

The second, third, and fourth floors are working areas consisting of several types of work areas: common work area, group work area, and individual work area. Common work areas accommodate collaborative activities requiring high communication frequency, with a capacity of up to 15 people. Group work area accommodate work activities for specific divisions, with a capacity of up to 12 people. Individual work areas accommodate individual activities, with a capacity of 1-2 people. The individual work area may also be the director’s office if the company has a significant hierarchical structure. The positioning of these three work areas is adjacent to facilitate workers’ accessibility in utilizing each area according to their needs. All work areas should provide good air circulation, which can be implemented by providing windows for air exchange. Natural lighting can be implemented by enabling a skylight, while artificial lighting supports activities during evening hours. Security measures can be implemented by providing an access card system for each work area module. As a result, according to Bernard Tschumi’s theory, the form-concept manifestation of space creates interaction. The desired interaction efficiently enhances worker productivity (see Figure 4). The envelope of the office building is utilized as a green area that is beneficial for the building, as proper vegetation usage could reduce noise from outside of the building.

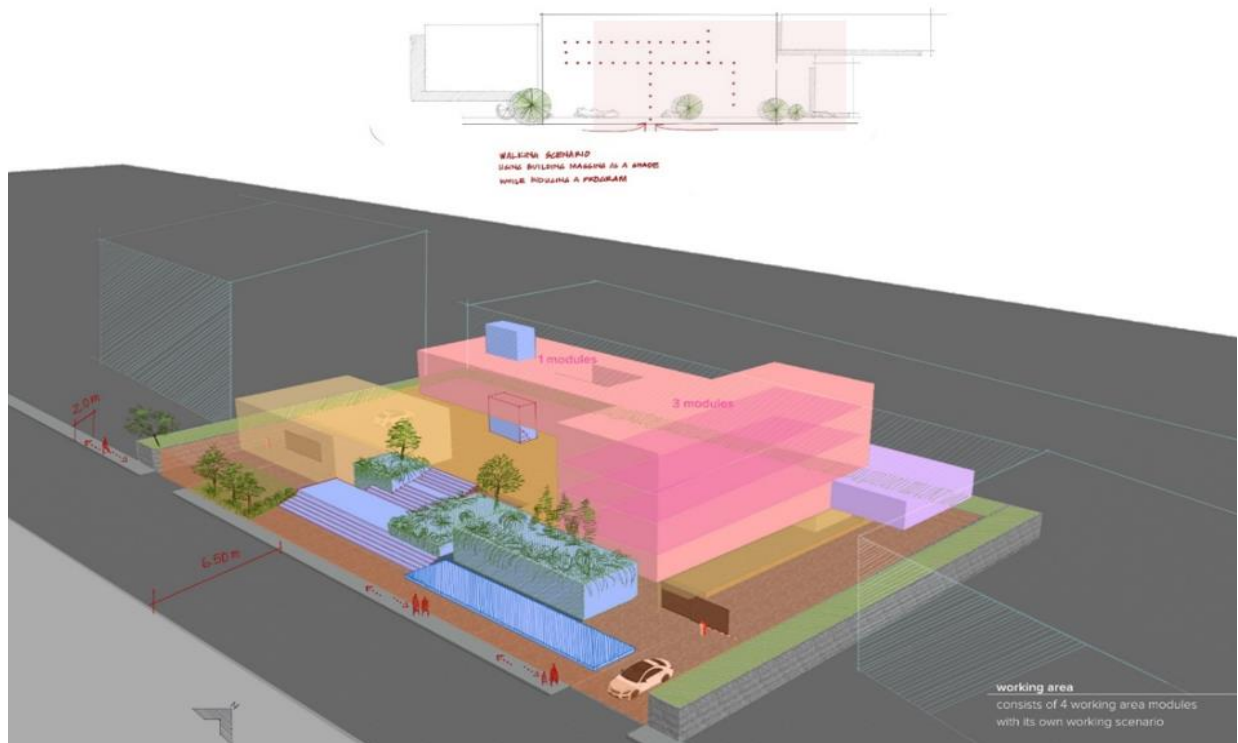


Figure 4. Second, Third, Fourth Floor Design Office with Activity-Based Concept

4. Conclusion

The difference between an open-plan office concept and an activity-based office lies in its primary focus. The open-plan concept prioritizes an open feel to enhance efficiency and flexibility without considering privacy. Meanwhile, the activity-based concept prioritizes efficiency and flexibility without sacrificing privacy. This is manifested by providing various work areas equipped with transparent partitions and not positioning workers based explicitly on their positions.

Previous studies have not yet shown the zoning area's result nor the percentage for each area. They also have not presented the type of activities that occur within work activity and the capacity for each activity. Zoning areas in office buildings must be conducted using an activity pattern study. Analyzing activity patterns provides valuable insights into the behaviour of building users and the types of activities they engage in. By examining the number of people involved in each activity, we can measure the required capacity for each space. Zoning areas in office buildings should prioritize physical elements in the work environment, such as air circulation, lighting (natural and artificial), adequate facilities, and promising security. Facilities are one of the main points in the activity-based concept related to work and recreational activities. Recreational activities can be implemented by providing a common area to accommodate social activities for workers. Common areas must incorporate vegetation elements to create a comfortable environment, and vegetation may serve as a sound buffer outside the building.

Zoning in office buildings with activity-based concepts is arranged based on the percentage of each area. With facilities, the area holds the most significant percentage, as work activities now need to focus on other supporting activities such as sports and social activities. The following percentage is allocated to common work area, group work area, and individual work area. All areas must be connected to facilitate users within the office building.

References

1. Stone, P. J., & Luchetti, R. (1985). Your Office is Where You Are. *Harvard Business Review*, 63(2), 102-117. doi:<https://dl.acm.org/doi/10.5555/5080.5081>
2. Barara, G. (2021). What is Work? In G. Barara, & A. Yermolenko (Ed.), *What is Work and its Impact?* (pp. 1-6). Edmonton: Golden Meteorite Press. Retrieved 11 08, 2023, from https://www.researchgate.net/publication/355889881_What_is_Work_and_its_Impact#fullTextFileContent
3. Sedarmayanti. (2017). *Perencanaan dan Pengembangan Sumber Daya Manusia Untuk Meningkatkan Kompetensi Kinerja dan Produktivitas Kerja*. Bandung: Refika Aditama. Retrieved 11 08, 2023
4. Hertanto, H., & Santoso, P. B. (2017). Analisis Produktivitas kerja Kajian Implikasi Budaya Perusahaan (Kasus PT Bank "X"). *Jurnal Bisnis Strategi*, 5(3), 23-37. doi:<https://doi.org/10.14710/jbs.5.3.23-37>
5. Rachmadhani, I., Al Musadieg, M., & Nurtjahjono, G. E. (2014). Pengaruh Lingkungan Kerja Terhadap Kinerja Karyawan (Studi pada Karyawan Perusahaan Daerah Air Minum (PDAM) Kota Malang dalam Upaya Meningkatkan Profesionalisme Sumber Daya Manusia). *Jurnal Administrasi Bisnis*, 12(1), 1-10. Retrieved from <https://media.neliti.com/media/publications/82947-ID-pengaruh-lingkungan-kerja-terhadap-kiner.pdf>
6. Sundstrom, E., & Sundstrom, M. G. (1986). *Work Places: The Psychology of The Physical Environment in Offices and Factories*. Cambridge: Cambridge University Press
7. Sedarmayanti. (2016). *Manajemen Sumber Daya Manusia, Reformasi Birokrasi dan Manajemen Pegawai Negeri Sipil*. Bandung: Refika Aditama. Retrieved 11 08, 2023
8. Gomes, F. C. (1995). *Manajemen Sumber Daya Manusia*. Yogyakarta: Andi Offset. Retrieved 11 08, 2023
9. Sedarmayanti. (2009). *Sumber Daya Manusia dan Produktivitas Kerja*. Bandung: CV. Mandar Maju. Retrieved 11 08, 2023
10. Scalco, D. (2017, 02 22). *How Open Offices Plans Affect Workplace Productivity*. Retrieved 11 08, 2023, from business.com: <https://www.business.com/articles/dan-scalco-workplace-productivity/>

11. Creswell, J. W. (2013). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. London: Sage Publications. Retrieved 11 8, 2023
12. Jerobisonif, A., Manu, A. K., & Amabi, D. A. (2019). Konsep dan Metode Desain Arsitektur Bernard Tschumi. *Jurnal Gewang*, 1(1), 20-26. Retrieved from <https://ejournal.undana.ac.id/index.php/gewang/article/view/1644/1265>