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Behavior Approach for Designing in Architecture

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Abstract:- Most theories on behavioral and built-environment involves interrelationships between architecture and human behavior. This research was done for the purpose to fulfill the needs of design methodology in specific ways in relation to the area of Perception and Human Behavior. The focus of research was to oversee whether Co-Working Space Performance gives impact on Satisfaction and Employee Productivity and furthermore how they affect the coping behavior. The findings have shown that a significant impact of Spaces' Performances on Space Satisfaction was occurred. Other than that, a significant impact of Space Satisfaction on Coping Behavior was found as well as significant impact of Spaces' Performances against Coping behavior. Architectural behavior approach which expects becoming humanist architecture is further required as a Planning and Architectural Design Concepts in the Future. A Guidelines for the Methodology of Architectural Design with Behavior concerns is therefore to proposed.

Keywords:- *Design Methodology, Architectural Concept, Behavioral Approach Introduction.*

I. INTRODUCTION

End Users so called human being should take an important role from each architectural work. It is the fact that currently abandon in the creation of architectural works were almost done, which even more, it led to the the failure of Architecture. Architects are experts in the field of planning and design, however they are not the real users who will use the work of architecture themselves. Architect's role is truly important. They must the one who have sense of behavioural touch based on Users' "needs" and Users' "wants". Those two things are different and is again indispensable today due to architecture has well-grown nowadays. All various perspectives on building's aesthetics, technology and cultural preservation have contributed the development of Architectural Works throughout the world. Architecture is a work of art and is made to fit the needs of functional, social, cultural, technical and climate. Its existence is closely related to the daily rhythm of human life (Sidharta, 1983, p.13). Behavioral approach emphasizes the dialectical relationship between humans and space, particularly with those people occupying the space which is diverse and specific in each location. For that reason, the aspect of norms, culture and psychology of different people will produce the concept and form a different room (Nuraini C., Antara, W. 2010 P.64).

II. THEORITICAL FRAMEWORK

A. Definition of Behavior

Human behavior comes from the urge that is within humans to meet the needs that are within them. Behavior is a manifestation of the need. Behavior is defined as an action and reaction of organisms to their environment, this means that new behavior will be realized when something is needed which causes a response called a stimulus, thus a certain stimulus will produce a certain behavior as well (Robert Y. Kwick, 1972). It can be concluded that behavior is an impulse from within humans that occurs when something is needed and ultimately causes a response. Behavior is divided into two parts, including:

1. Overt Behavior, behavior that is seen with clearly in the form of an action
2. Covered behavior, invisible behavior clearly by others. (example: thinking behavior, sad, afraid, etc.)

B. Definition of Behavioral Architecture

Behavioral architecture is a field of architecture that pays attention to and considers human behavior in its design. Behavioral architecture is a field of architecture that bridges the relationship between humans and their built environment.

According to Snyder and Catanese (1984), behavioral architecture is an architecture that is able to respond to human needs and feelings that adapt to the human lifestyle in it. Behavioral architecture is expressing an awareness of the social structure of people, a dynamic joint movement over time. Behavioral architecture means to include behavioral considerations in every design. The relationship between behavior and architectural design - as a physical environment - can be a facilitator of behavior or vice versa as a barrier to behavior (JB Watson, 1878-1958).

C. Coping Behavior

Coping Behavior arises when someone fulfills their needs by making adjustments to a space (Purwanto, 1999). Boutourline (1970) said that "The dominant situation in modern life reflects that the environment was not built for them". Coping behavior is carried out with the aim of bringing comfort and happiness to humans themselves. The way humans adapt themselves to meet their needs is conducted in two ways, including:

1. Autoplasties/Adaptation: Humans to familiarize themselves with they have given by the building or the environment in which they live. It can be good or bad for themselves;
2. Alloplasty/Adjustment: The way of human to change, adding or subtracting a part of the building or the environment they live in to suit the activities or behavior of the humans themselves. Adjustments are also divided into: Physical Adjustment in which a change, addition or visible physical reduction (eg insulating walls to increase the drying room of the laundry room) and another one is Functional Space

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Adjustment in which a subtraction made by human by changing the function of the room (eg changing a bedroom into a study room).

Due to there is an influence between Space and Behavior, therefore Architects demanded its role in order to build "a good and proper" space. The reason to create the good ones are to ensure that new space will provide a positive influence for the users of the space. On the other hands, Architects have also a "power" to steer the people behavior better through the effective use of space with its creation and creativity. There are two different types of behaviors. One is Overt Behavior and the second is Covert Behavior. The type of Overt behavior in the form of human action is a continuation of the Covert Behavior, including these are attitudes and perceptions. Architect needs to be aware of Overt Behavior which then become a benchmark of design. Architects should also be very sensitive to the people's Covert Behavior, even more of each individual or groups in order to obtain Basic Behavioral Covert Data, such as Perception, that will be useful for resulting the design concept. Several research conducted can be concluded that the relationships between Space and Behavior. With the theories of Human behavior affects Space Design and vice versa, again, it has therefore proven the importance of theory on "Space Design will impact behavior and Behavior impacts the space design".

D. Factors Affecting Behavior

Human behavior has a close relationship with the environment that has been created for it. If there are changes that occur in the environment, then it can affect the human behavior. The following are some of the variables that affect human behavior (Setiawan, 1995), including:

1. Space: The most important thing in the influence of the space on its users is how the room is used by its users;
2. Size and Shape: The size and shape of the space must be adjusted to the function of the space because it will greatly affect the psyche of the user;
3. Furniture and Arrangement: The arrangement of furniture greatly affects the communication between the building and its users, because the arrangement will show the characteristics or characteristics of the user;
4. Color: Color has an important role in relation to humans, because color can regulate or change human behavior and the quality of the space and it can also make next change;
5. Sound, Temperature and Light: These three are very influential on the behavior of building users because if it is too loud it will be very disturbing. The room temperature will be very influential because the temperature must be in accordance with what is desired by the user. The lighting must also be adjusted to its function because it can greatly affect the psychology of the user.

E. Principles of Behavior

In accordance with the several notions of Behavioral Architecture that have been described above, humans will not be separated from the environment that has shaped it. The built environment affects the activity or behavior of the user. On the other hand, humans create an environment accommodate the activities or behavior of its users.

The following are some of the principles that must be considered in Behavioral Architecture, including:

1. Able to communicate with humans and the environment;
2. The design made must be understood by the designer and its users regarding the relationship between the user and the design of the building;
3. The building must have the following requirements:

a. Reflection of building function
b. Shows proper scale and proportion
c. Indicates the materials and structures used;

4. Accommodate the activities of its residents comfortably and pleasantly;
5. The design is made according to the wishes and needs users according to their routine activities, therefore the designer must be able to apply this. In addition to that, attractive elements and environmentally friendly materials should be used, so that they can give the user a comfortable and pleasant impression.
6. Fulfilling the aesthetic value, composition and aesthetics of form. Aesthetics or beauty in architecture has several elements in it, namely:

a. Unity into a beautiful and harmonious;
b. Balance makes the aesthetic value of an object must be balanced;
c. The proportions, sizes of each element in the object must match so that related to each other and interesting to see;
d. Scale, usually obtained by the size of the building compared with the human element around it;
e. Rhythm, repetition of elements that exist in building objects

By looking at the many problems that arise as a result of Due to the lack of an approach to the human aspect, many experts have developed design methods that pay attention to the human aspect in it.

F. Perception and Behavior: Interelationships

Perception - as one of the examples of the "Covert Behavior Basic Data" (assessed by instruments, eq. Perception) occurs when humans and the environment into contact with each other (Bell, Fisher Ross & Loomis, 1978, p.89). The individual's perception is impacted by their experience. Their experience is also much determined by their values and their cultural norms, such as their typical daily behavior. The habits of human being are impacted by their Age, ethnicity as well as their religion (Sarwono 1995, p.50). Therefore, it is important to aware that assessing and collecting the behavioral data and user perception as well as receiving feedback taken by Post-Occupancy Evaluation is truly essential. It is a base for taking any decision for the future design. The use of space is measured effectively or not ultimately depend on how far behavior of human being who are the end users counted as an important factor considered in the process of designing a building. An understanding of the concept of behavioral molding is greatly contributing to the creation of the built-environment that is close to ideal to live happily ever now and in the future. The theory of Coping Behavior from Purwanto (1999) has stated that Coping Behavior is happened when someone meets his needs by making space adjustments. The Coping actions against the physical environment starts with the individual's

perception toward the physical object/environment. Once individual perceives unable to cope with his environment, it will further on perceiving stressed and attempting to act as an effort to cope with his environment (Bell, Fisher & Loomis Ross, 1978). The strategy of managing behavior involves Adaptation and Adjustment. Adaptation is clarified as the way people change behavior to adjust with their environment. On the other hand, the way people change physical space to fit their behavior is defined as Adjustment (Bell, Fisher & Loomis Ross (1978).

III. ANALYSIS

A. Perception and Coping Behavior Concepts

This diagram shows how the concept of linkage Perception and Coping Behavior that developed form earlier major theories and developed as seen in figure 01 below (Indriyati 2016).

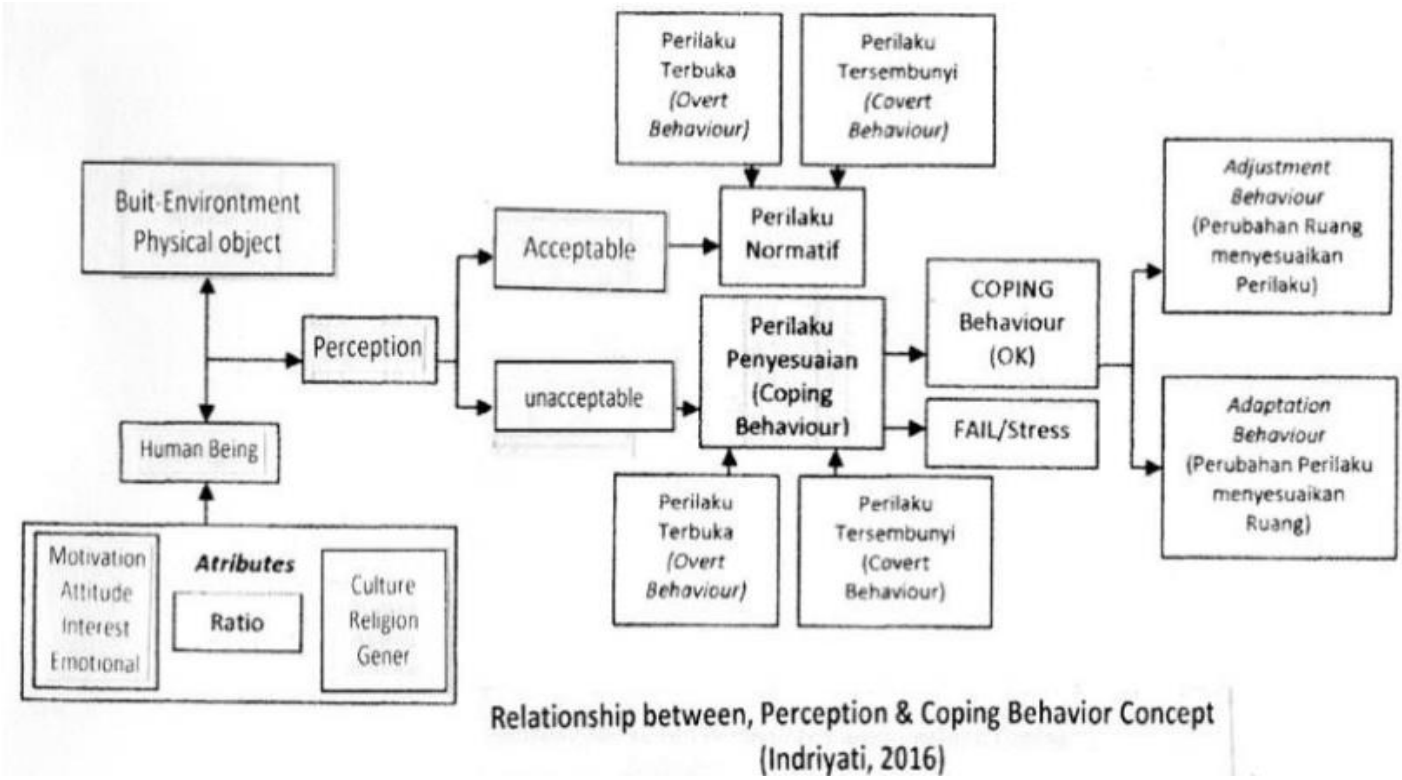

Fig. 1. Diagram of Interelationships between Perception & Coping Behavior (Indriyati, 2016)

B. Post Occupancy Evaluation Research: A Case Study of Co-Working Office Space

In many research conducted for residential objects have shown that the existing Built-Environment has a strong impact on human behavior. It is the time to further develop Behavioral Architecture in the area of Co-Working Office Space. This research done to see relationships between Perception and Human Behavior as well as the extent to which Co-Working Office Space Performance - physical and psychological condition of space have delivered an impact on Employee Productivity and Employee Satisfaction.

Research proceeds with taking into account that working is the most important activities for each human being in daily basis. Why is it crucial and almost as important as residential cases due to the fact that people work daily and spend their time for 9-12 hours in a day an only 2 (two) days a week people stay away from office. This is why the strong reason why the workspace is important to evaluate and further architects to put their attention other than residentials. The research therefore was selected for Co-Working Office Space of where two or more tenants have joined using their space in different time. The individuals involved in the research are Employees for Director, Manager to Medium level staffs. The Co-Working Office Space chosen then due to the more various people to be evaluated, making this research broaden and more representative.

The discussion will start with exploring the value of space in terms of their physical and psychological performance. One important factor taken into account in order to escalate the productivity of the workers is the availability of a proper working space. Previous research has suggested that workers' resignation increases as workplace availability positively affects the quality of labour performance (Peach and Slade 2006). Post-Evaluation Occupancy toward Space Performance is becoming so crucial to conduct. One factor impacting the built environment design is the need of awareness of architects toward the built environment criteria; this includes to meet user needs and functional requirements of floor space (Indriyati, 2009). One of example may be used and understood as Post Occupancy Evaluation (POE) is indicators used for spatial for the functions and Room's form for functions. Moreover, some other indicators can be applied to evaluate the Psychological Space Performance such as: The Glare; Heating conditions; Freshness/Stuffiness;

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Air Circulation; Room's level of humidity; Rooms' Visual Privacy; Rooms' Conversational Privacy; Room's locked availability.

The work productivity, spatial satisfaction and coping behavior variables are becoming challenging to be discussed. In Martoyo's book (1994), stated that one of the factors impacting work productivity is the physical arrangement of space. Duvall-early and Benedict (1992) in their study found that without disruption gained from working in private space, then people feel better to use their abilities and are able to stay busy all the time and perform better.

The work environment improvement may reduce employee complaints and absenteeism and even more can escalate their productivity (Roelofsen 2002). Indicators used by Wibowo (2003) to evaluate Employees' Work Productivity are: (1) Work Efficiency; (2) Optimizing Work Time or Time Efficiency; (3) Work Attitude; (4) Task Settlement; (5) Quality of Work Performance.

Productivity happened when job satisfaction is needed. Robbins (1997) states in his book that a correlation between satisfaction with their work environment has found which further affects workers' behaviour and attitude. Job satisfaction also describes the relationship between individual, work and environment. Satisfaction arises by individuals if they love their work and environment (Cherrington 1999). However, as mentioned in Luthans's theory (2002) that although workers are willing to work in a safe and comfortable physical environment, the actual physical condition of the workspace does not necessarily determine their satisfaction. More than that, it is said by Luthans (2002) that the need for power, achievement and status may be taken into account as part of the satisfaction level. Appreciation given by the company can be in the form of privilege for facilities or economic or financial items, which possible then considered to impact on their work performance. One other important thing is to provide facilities like a good workspace with broad access to all information through technology (unlimited). This is perceived essential to improve employees' woking performance. This study was carried out to see how various variables such as space Physical Spatial & psychological aspects will impact on individual satisfaction and decision in taking Behavior of "Coping", especially Space Adjustment.

IV. FINDINGS

The research was carried out with selection of the Co-Working Office Space. The workers participated in the study is employee from top to medium level with self-working space and locate themselves in the area of 3.00-5.00 m2 and on the 1-5 floor). The employees' activity is mostly typical – Management tasks. A total of 96,5% of the total employees became research respondents. Respondents' demographics were mostly middle-managements (60.8%) in ages > 40-55 years (40.2%) and men (66.5%).

The research findings have indicated that a significant impact of Physical Space Performance on Work Productivity was found; No impact of Space Psychological Performance on Work Productivity; there is a significant impact on Physical Performance (Space & Use of Wall & Space Psychological) to Work Productivity were found; a significant impact of Space Physical Performance on Space Satisfaction (both Quality & ICT Facilities). It is also found that a significant impact of Space Psychological Performance (glare and visual privacy) on Space Satisfaction (both Quality & ICT Facilities); a significant impact both the Physical & Psychological Performance of Space to Space Satisfaction (Quality & Facilities ICT); a significant impact of Space Satisfaction on Behavior Coping; a significant impact of Physical Space Performance (extent of space) to Coping Behavior; a significant impact of Space Psychology Performance (glare, visual privacy, air circulation and room humidity, room temperature and stuffiness) against Coping Behavior; a significant impact of Physical & Psychological Performance of Space against Behavioral Coping (Indriyati 2015, pp.123).

The study summarizes that Space Psychological and Physical Performance and Work Productivity affect their Satisfaction including the Quality of Space and Facilities of ICT provided. However, Psychological Performance has not shown effecting on work productivity. Psychological performance here can be interpreted by more human needs, such as remuneration or rewards. This is beyond the scope of the architecture field. Both Spatial Assessment Variables - psychological and physical performance - have shown a positive impact on work productivity. The use of office wall materials and floorspace aspects in the physical space indicators have revealed affect the productivity of work, while no psychological factors have shown affect the employees' work productivity. ICT is strongly influenced by Physical and Psychological performance of Co-working Space. Research has shown that employees' satisfaction toward their space is strongly influenced by psychological aspects like glare and privacy. Employees' Coping Behavior is significantly influenced by employees' satisfaction to their workspace. Coping Behavior were taken in frequent is influenced by Layout Performance. Space Psychological Performance was found more important for the occurrence of Coping Behavior compared to Physical Performance. Psychological perceptions of the employee toward the space were found significant affecting Coping Behavior, particularly about feeling stuffiness, air circulation system and Visual Privacy. The physical space performance was found only for the aspect of floor space. These listed findings above are significant and useful to the Architect and Corporate Management as well as Owner to provide appropriate workspace design in the future. A good Workspace Design will be an early stage of increasing the Productivity and the Employees' Performance.

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V. CONCLUSION

Humanist architecture closely related to architectural behavior approach. It is required as a Planning Concept and Architectural Design for the Future: **Basic Concepts of Architectural Design: Behavioral Approach**. Architect should have strong awareness of users's needs to develop design alternatives. Implementation Design; Final design must be resulting more livable environments and fulfill the needs and behaviors of people who live in it.

A New Guidelines for Planning and Architectural Design Method for Planning and Design Architecture with Behavior approach concerns can be proposed like Planning & Design Process below (Indriyati 2016). There are 7 (seven) stages can be carried from Data Collection, Programming and Specification, Conceptions of Architecture Program, Design, Constructions, Evaluation, Recommendation (Indriyati, 2016) as seen below in Figure 02. The humanist Architecture Works derived from the Concept of Behavioral Architectural Approach will be a successful Work of Architecture in the future.

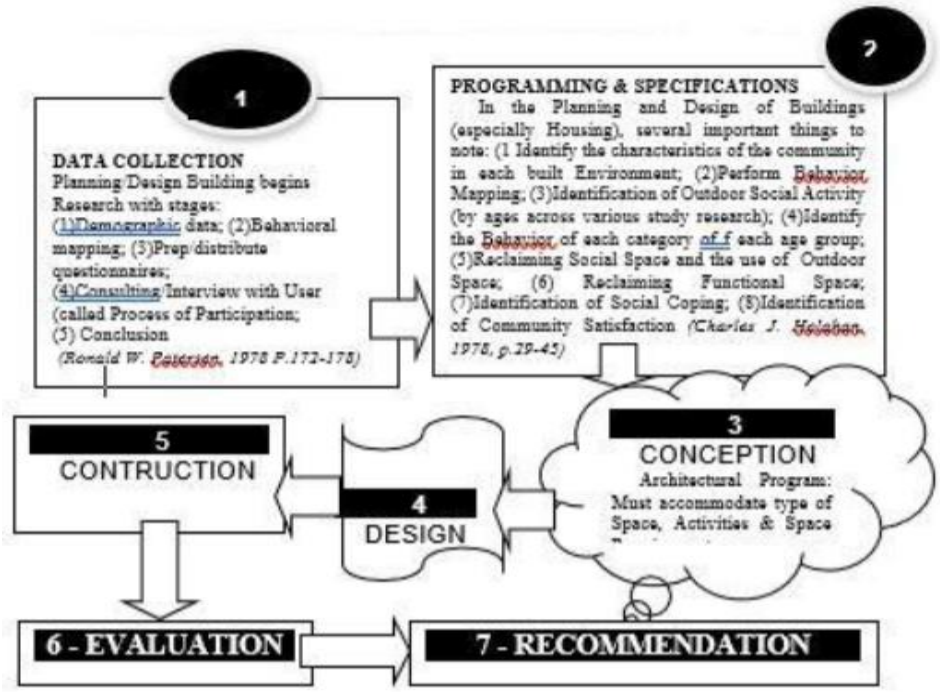

Fig. 2. Behavioral Design Methodology (Indriyati, 2016; 2022

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