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Research paper

Designing in Architecture: Behavioral Approach Methodology

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Abstract

A fundamental premise on environmental and behavioral fields involves assumptions about the systematic interrelationships between architecture and patterns of human behavior. The case study conducted was to confirm the needs of specific design methodology in relations to the area of Perception and Human Behavior. The research focused to the extent to which Office Space Performance gives impact on Employee Productivity and Satisfaction. Following that, It was also seen how those affect the behavior of coping. The findings show that there is a significant impact of Spaces' Performances on Space Satisfaction. Further, there is a significant impact of Space Satisfaction on Coping Behavior and also a significant impact of Spaces' Performances against Coping behavior. Humanist architecture with architectural behavior approach is required as a Concept of Planning and Architectural Design in the Future. A New Guidelines for Planning and Architectural Design Method for Architectural Design with Behavior concerns is proposed.

Keywords: *Design Methodology, Architectural Concept, Behavioral Approach*

1. Introduction

Architecture has well-grown nowadays. All aspects, such as building's aesthetics, technology and cultural preservation has delivered the development of Architectural Works throughout the world. However, Human Dimension in Architecture as End Users should be taking an important role from any architectural work, which is current facts said that increasingly abandoned in the creation of architectural works. Evenmore, it led to the process of the occurrence of The Failure of Architecture. Architects are experts in the field of planning and design, but not the real users who will use the work of architecture. The importance of architect's role that has a sense of behavioural touch based on Users' "needs" and Users' "wants" is again indispensable today.

2. Theories

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). Human behavior is defined as a results of person's internal stimulation which is followed by an attempt to meet their needs. Cultural, social, physical and geographic environment contribute to the process of formation of behavior (molding behavior). Behavioral approach emphasizes the dialectical relationship between humans and space, particularly with those people using or occupying the space which is diverse and specific in each location. Therefore, 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).

With the influence between Space and Behavior, therefore Architects demanded its role in order to create space that is "good and proper". It is done to ensure that Space design will provide a positive influence for the users of the Space. On the other hands, Architects are also able to "steer" people to behave better through the effective use of space with its creation and creativity. Overt Behavior in the form of human action is a continuation of the Covert Behavior, including these are attitudes and perceptions. Architect needs to understanding Overt Behavior which then become a benchmark of design. However, Architects should also be sensitive to Covert Behavior of each individuals or groups in order to obtain Basic Behavioral Covert Data (e.q. Perception) that will be used in the design concept. Several research conducted can be concluded that the relationships between Space and Behavior. Human behavior affects Space Design and vice versa, again, it has proven how the importance of theory on "Space Design Impact Behavior and vice versa".

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). People look at their surroundings through the medium of the senses. Contact with the environment through our senses followed by cognitive and then back again to the human senses which produces the perception or mental response (Purwanto 1999, p.37; Widayatun, 1999, p.111). The individual's perception is influenced by past experience, where the experience is also determined by cultural norms and values, including the daily behavior. The human's habits are also influenced by factors Age, religion and ethnicity (Sarwono 1995, p.50). Therefore, it is important to understand that measuring and collecting the behavioral data and user perception as well as receiving feedback taken by Post-Occupancy Evaluation is essential before any decision making process for the future design. Effective use of space will ultimately depend on how much of human behavior as an important factor taken into account in a process of building design. 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. Coping Behavior according to Purwanto (1999) is occured when someone meets his needs by making space adjustments. The need for Coping against the physical environment begins with the individual's perception of the physical object or its environment. Once individual is unable to do coping behavior toward his environment, it will continue to stress and try to act as an effort to overcome his

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environment (Bell, Fisher & loomis Ross, 1978). The Behavioral Strategy undertaken involves Adaptation and Adjustment. Adaptation is defined as the way we change behavior to adjust the environment. On the other hand, the way we change physical space to fit our behavior is defined as Adjustment (Bell, Fisher & loomis Ross (1978)

3. Analysis

Perception and Coping Behavior Concepts:

Their Interrelationships: Here is how the concept of linkage Perception and Coping Behavior that developed from earlier major theories and developed as seen in Figure 01 below (Indriyati 2016).

Post Occupancy Evaluation Research: A Case Study of Campus Office Design Evaluations:

Previous research has shown that the Built-Environment existence has a strong impact on human behavior. The research exploration on Behavioral Architecture was done frequently for Residential Cases. It is the time to develop Behavioral Architecture in the area of Office Space. This research conducted was in relation to Perception and Human Behavior as well as the extent to which Office Space Performance - physical and psychological condition of space - gives Impact on Employee Productivity and Employee Satisfaction.

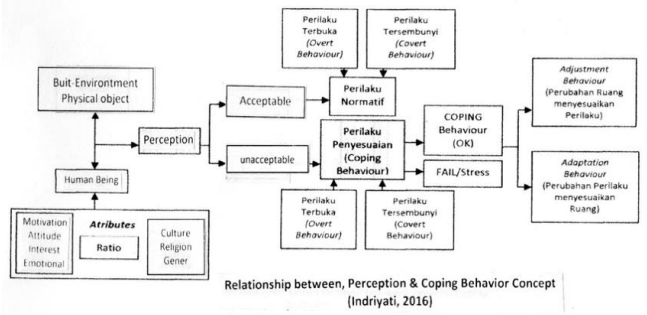

Fig: 1: Diagram of Relationships between Perception & Coping Behavior (Indriyati, 2016)

Research was initiated considering that work activity is one of the most important activities for every person in daily basis. Why is it significant and almost as important as residential cases? This is due to the fact that people work every day and spend most of their time for 9-12 hours in a day an only 2 (two) days a week people do not go to work. It is then, the use of the workspace is important to evaluate. The research done was in the Office Space of the University where the individuals involved are Employees, Lecturers and Board of Managements (Elements from the Leaders to University Managers).

Space: Physical & Psychological Performance:

One significant factor considered in order to increase the productive worker 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). Assessment of Post-Evaluation Occupancy toward Space Performance is important to do. One of the factors affecting the design of the built environment is the need to understand the built environment criteria; this includes to meet user needs and functional requirements of floor space (Indriyati, 2009).

One of the factors affecting the design of the built environment is the need to understand the built environment criteria; this includes to meet user needs and functional requirements of floor space (Indriyati, 2009). One of example can be used and understood as Post Occupancy Evaluation (POE) is indicators used for spatial assessments by Indriyati (2013). Indicator used for the research in order to assess the Physical Space, such as: Floor space, Room's Flexibility for the functions and Room's form for functions. In addition, several indicators used to assess the Psychological Space Performance are: The Glare; Heating conditions; Freshness/Stuffiness; Air Circulation; Room's level of humidity; Rooms' Visual Privacy; Rooms' Conversational Privacy; Room's locked availability.

Work Productivity, Spatial Satisfaction and Coping Behavior

In a book written by Martoyo (1994), mentioned that one of the factors that affect work productivity is the physical arrangement of space. Another study by Duvall-early and Benedict (1992) also found that with no disruption gained from working in private space, then people feel better to use their abbilities and are able to stay busy all the time and perform better. Improving the work environment reduces employee complaints and absenteeism and even increases productivity (Roelofsen 2002). Indicators used by Wibowo (2003) to assess Work Productivity are: (1) Work Attitude; (2)Task Settlement; (3)Work Efficiency; (4)Optimizing Work Time or Time Efficiency; (5)Quality of Work Performance. Productivity occurs when the need for job satisfaction. Robbins (1997) writes in his book that there is a correlation between satisfaction with their work environment which further affects workers' attitudes and behaviour.

Job satisfaction also describes the relationship between invidual, work and environment. Satisfaction arises by individuals if they love their work and environment (Cherrington 1999). However, Luthans's theory (2002) states specifically that although workers want to work in a safe and comfortable physical environment, the actual physical condition of the workspace does not necessarily determine their satisfaction. In addition, Luthans (2002) also says in his book that the need for power, achievement and status can be considered part of the level of satisfaction. These workers' economic appreciation given by the company can be in the form of privilege for facilities. It may be then considered to affect their work performance. Providing facilities - a good workspace and access to all information through technology (unlimited) - are essential to improve work performance. Research was conducted 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.

4. Results

The Business Professional area chosen for the study is the Campus Office Case Study where the worker is a Lecturer and Researcher with self-working space (a majority in the area of 3.00-6.00 m2 and on the 1-3 floor). The use of space functions and the length of space occupation were similar from one division to another. A total of 85.19% of the total employees became research respondents and all classifications found that they have their own workspace. Respondents' demographics were mostly midlle-managements (56.5%) in ages > 45-55 years (36.2%) and men (55.1%).

The findings of statistical research show that: (1)There is a significant impact of Physical Space Performance on Work Productivity; (2)No impact of Space Psychological Performance on Work Productivity; (3)There is a significant impact on Physical Performance (space & use of Wall & Space Psychological) to Work Productivity; (4)There is a significant impact of Space Physical Performance on Space Satisfaction (both Quality & ICT Facilities); (5)There is a significant impact of Space Psychological Performance (glare and visual privacy) on Space Satisfaction (both Quality & ICT Facilities); (6)There is a significant impact both the Physical & Psychological Performance of Space to Space Satisfac-

tion (Quality & Facilities ICT); (7)There is a significant impact of Space Satisfaction on Behavior Coping; (8)There is a significant impact of Physical Space Performance (extent of space) to Coping Behavior; (9)There is a significant impact of Space Psychology Performance (glare, visual privacy, air circulation and room humidity, room temperature and stuffiness) against Coping Behavior; (10)There is a significant impact of Physical & Psychological Performance of Space against Behavioral Coping (Indriyati 2015, pp.123). Descriptively, the study summarizes that Physical and Psychological Performance of Space and Work Productivity affect their Satisfaction including the Quality of Space and Facilities of ICT available in their workspaces. However, Psychological Performance shows no significant effect on work productivity. Psychological performance here can be interpreted by more human needs, such as remuneration or rewards. It is more likely that such aspects that are considered more important to employees are not the physical quality of the space available to them. This is beyond the scope of the architecture field. Both Spatial Assessment Variables - physical and psychological performance of space - have shown a positive impact on work productivity. Floor space and the use of office wall materials in the physical space indicators have revealed affect the productivity of work, while no psychological factors have shown affect the productivity of work. Employee Satisfaction on the quality of their workspace (including available ICT) is strongly influenced by Physical and Psychological performance of Space. Research also shows that worker satisfaction on his work space is strongly influenced by psychological aspects (glare and privacy). Employees' Coping Behavior is significantly influenced by workers' satisfaction with their workspace. High Behavior Coping is influenced by Layout Performance. Psychological Performance of the Space was found more important for the occurrence of Coping Behavior compared to Physical Performance. Psychological perceptions of the employee toward the space was found significant affecting Coping Behavior, particularly related to freshness/stuffiness of space, air circulation system and Visual Privacy. The physical space performance was found only for the aspect of floor space. That was significantly found affecting the Behavior of Coping. These findings are significant and useful to the Architect/Interior Designer 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.

5 Behavior Approach as a Basic Concepts of Architectural Design

Humanist architecture with architectural approach behavior is required as a Planning Concept and Architectural Design for the Future. Architect should be made aware of the needs of users to develop design alternatives. Implementation Design; Final design product must create more livable environments and meeting 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). It can be conducted with 7 (seven) stages 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.

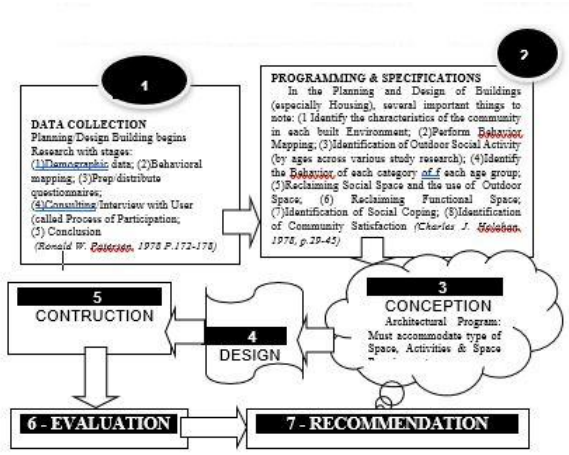

Fig 2: Behavioral Design Methodology (Indriyati, 2016)

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