

Digital Application of Home Architecture Growing Housing Careers and Push Pull Mooring (PPM) Factor Approach

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ABSTRACT

The provision of simple housing for low-income Indonesians has been a concern of the Indonesian government as a provider of simple housing for many years. This can be influenced by the pattern of behavior of the Indonesian people in the life cycle of a person and family. Housing Careers is one of the factors that can affect behavior patterns, space requirements and a person's demand for housing. One of these factors can affect the pattern of space requirements for the process of developing and renovating houses, this is called a growing house. The development of architectural technology in the modern era continues to grow balanced with the increasing advances in information technology 4.0 and 5.0 so that in this paper it is explained the transition of architect services to architectural applications. The purpose of this paper is to provide ideas for the use of architectural digital applications for simple housing communities in renovating houses which tend to be influenced by one's housing careers. The research methodology was carried out by searching some literature and conducting a questionnaire with the housing careers approach, push pull mooring (PPM) switching the use of architectural services to architectural digital applications. As a result, houses grow in simple housing which are influenced by housing careers and the shift in architect services to digital architectural applications.

Keywords: *Housing careers, Growing houses, Push pull mooring, Architectural digital application.*

1. INTRODUCTION

Home is one of the primary needs for humans. In big cities with high population growth, continues to increase often the housing developer aiming for millennials. Residential house with location strategic, affordable price, has a spatial pattern functional and installments according to ability, is a dream for millennials [1].

The provision of affordable housing is demanding housing developer to provide building area and little land. Provision of limited space, namely family room, bedroom and service room are things the main thing needed in arranging a small house space. So, according to Fahminnansih, the house in The average housing is undergoing renovations due to the demand for space needs increases, the number of occupants increases and changes in the function of the house [2].

Housing careers are factors that can influence one's desire to own a house. This matter expressed by

Vajiranivesa, with the presence of house demand means a desire to buy which is adjusted to one's financial ability to buy one or more houses [3]. Request housing demand can be defined as housing needs that are adapted to the conditions and everyone's desires based on economic and financial capabilities different social. Housing careers are movement patterns someone to be able to get a house, which is described someone or young millennial couple who are starting left his parents' house and moved to buy house or rent a house elsewhere.

This stage is usually the transition stage for own a house. After going through a transition period, the couple millennial youth start looking for a house as a form of responsibility for obtaining safe housing in educate and raise children. Turnover after child big start back to leave parents' house and move to another house with a smaller size, so on. A person's movement pattern to get owning a house is certainly in line with the

movement of time, which has an impact on increasing age and social conditions family economy (Table 1).

By going through housing careers information can be predicted on the need for space and housing through demographic data on population and based on pattern age structure which is described 1. Age at time leaving home. 2. Age when starting work 3. Age married and so on

The following is an explanation of housing careers according to Murdie et al., and Haan who argue that there are five stages housing careers [4,5].

1. Stages of a person before having children. On this stage is the stage of independence and work, and still concentrating on a new job career. On generally a person at this stage is still very small possibility to think of a place to live and still choose to live with parents or decide to rent a house.
2. Stages of a person to give birth and have child. It started with a young couple who decided to marry and have a household and have children. On At this stage the husband and wife think more seriously to find and find a place to live even if you can be done by renting a house. They have thought things will be comfortable, environmental quality. Housing, distance home to several facilities including a place to work, children's education, health and so on.
3. The next stage of raising children. In terms of This husband and wife couple has a more serious stage in thinking and looking for a place to live inhabit. Taking into account the required facilities for child development.
4. At this stage a child has reached maturity, independent and starting to leave people's homes old.
5. This last stage is the stage of facing old age. At this stage, parents have started requires the role of others in caring for his life.

Growing house is a concept that is often faced architect in dealing with the problems experienced by residents the house, to redesign the initial room pattern to become the pattern of adding a new room adjusted to

the needs of today's homeowners. Development will the phenomenon of growing houses will be experienced in almost all countries growing [6]. The negative impact of growing houses including the utility burden, less ecological factors efficient [7]. Aspects that influence the concept of growing houses influenced by functional, technical, and behavioural aspects. In the functional aspect is influenced by grouping function, circulation, material, size, and flexibility.

Technical aspects are influenced by structure, utility and distance while the behavioural aspect is more into behavioural activities [8].

With changes or renovations to the house live often have done some development from a standard one to a change in floor plan layout challenges then unconsciously have done the concept of the house grow. Agusniansyah said the perception of the house grow from a very simple house // small includes a family room, bedroom and service room, then developed into a large house area [9]. House construction can be done in stages financial (economic) adjusted for responding to today's growing space needs needed. Home design can be done at the time of planning so that development can be carried out in stages.

The development of the house is carried out based on the dimensions of the land available, can be done horizontally or vertically. According to Akmal, the house that the developer offers starting from type 21-68, a nice renovation was carried out urgent space requirements [10]. Axellano explain need to be considered gradually in planning a house to grow, can be done vertically as well as horizontal. Prepared building construction, space requirements and financial and economic problems [11].

Push Pull Mooring in services, there are several driving factors associated with the quality of service provision, so that customers move to service providers the new one. The driving factors for customer movement that is, with quality, satisfaction, trust, value, commitment and price perception. The pull factor is positive factors that alternative service providers can attract customers to move [12].

Table 1. Previous scientific writing (Source of personal processing data)

Scientific Title	Problem	Theory	Variable Emphasis	Moderating Variable	Reference
RISHA prefabricated system modular grow house design alternative	How are the house development strategy efforts carried out in stages, providing benefits for lowering production prices and efforts to increase house purchasing power?	Housing Careers, PPM (Push,Pull,Moo ring)	Single, new couple and family	Based on Age. Propose of house needs	[13,14]
The Development of a Growing House Design Case Study of Perumnas Wonorejo Karanganyar	Raising awareness of feasibility, comfort and health	Sustainabilitas	Lighting, ventilation and efficient use of natural resources, environmentally friendly	Actors, Places & types of activity	[7]
Growing House Design Processing Concept	How to get an initial habitable house design, then renovate/add space without changing the initial design from the developer	Home Grow	The need for space increases, the number of family members increases & changes in the function of the room	House development vertically and horizontally	[9]

As for the reason as a consumer to do movement to substitute products/goods that have advantages that are more attractive than the original product. With the existence of a paradigm (push-pull) becomes more complex with the presence of intervening variables. As for obstacles like obligations in the family with cost barriers high displacement. The inhibiting variable (mooring) can be include attitudes to displacement, subjective rules (influence) social), past behavior, switching costs and more tend to do other variations.

The development of science and technology in the field of Architecture demands changes in the architect's design process. As in the computer era, architecture is a milestones give rise to images in the form of digital [15]. In the 80s developed with technology 2Dimensional CAD software and 3Dimensional software simultaneously developed BIM technology (Building Information Modeling). The next stage comes

with Algorithm-Aided Design (AAD) and Algorithm-Aided Building Information Modeling (AAB) [16]. So the architect greatly assisted in creating designs, both in 2Dimensional space pattern arrangement in the form of floor plan layout as well as system-based 3Dimensional visualization algorithms and parametric calculations to generate 2D and 3D design with computer rock.

As for the precedent in this study, Merrell et al. [17] using system computing. Presentation using this method of making auto layout of buildings for graphics applications computer.

The approach is motivated by the layout design process developed in architecture. Given a set high-level requirements, architectural programs synthesized using Bayesian networks trained on world data real. The architectural program is embodied in a set of floor plans floor, obtained by optimizing the floor plan layout. Floor plan used to construct a complete three-

dimensional building with internal structure. Research Merrell et al. [17] demonstrated various computer-generated buildings produced by the approach presented.

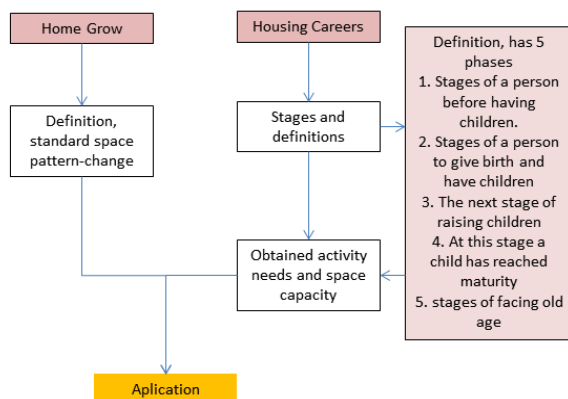


Figure 1 Illustration used by Bayesian [17].

Computer generated building layout (see in figure 1). Program architecture, illustrated by the bubble diagram (left), generated by Bayesian network trained on world data real. A set of floor plans (middle), optimized for architectural program. 3D model (right), generated from a floor plan floors and decorated in cottage style [17].

So the aim of this paper is to provide information on how housing careers behave a person/family can certainly provide benefits in determine the development or renovation of a growing house followed by the shift of architectural services to architectural applications.

2. RESEARCH METHODS

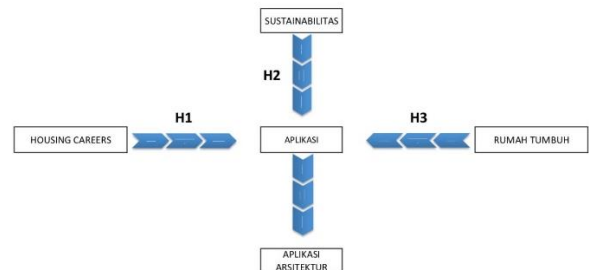


(source of personal processing data)

Figure 2 The flow of discussion about growing homes and housing careers.

The research methodology used is based on some previous scientific research, some literature and questionnaire was carried out. At the stage of searching for scientific research the previous one was an alternative to the design of a modular growing house RISHA pre-fabricated system, house design development the case study of the Wonorejo Karanganyar housing complex grew and home grown processing concept (fig. 2).

Then for the questionnaire stage, the approach will be development/renovation associated with behavioral processes a person's behavior (housing careers) and factors (PPM) Push Pull Mooring shift from services as an architect to digital applications architecture done in one of the residential settlements simple in Sintang Kalimantan (fig. 3).



(Source of processing personal data)

Figure 3 The theoretical model.

In the table 2 602of indicators and research instruments HC1, HC2, HC3 and HC4 explains how life cycles and processes are a person housing careers has an age indicator, family needs, number of occupants of the house and facilities in the environment of course seen from one's needs.

On instruments RT1, RT2 and RT3 explain some of the Factors for the occurrence of home-grown treatment can be influenced by increasing space requirements based on increasing the number of residents, by trying to maximize existing land.

A1 architectural digital applications, A2 can provide views will digital science architecture to make it easier in terms of communicating ideas and concepts to community/client. The use of architectural digital applications can be become an alternative for the lower class of society. PPM 1, PPM 2 and PPM 3 are very closely related to customers in creating a new, varied service experience (See in figure 4).

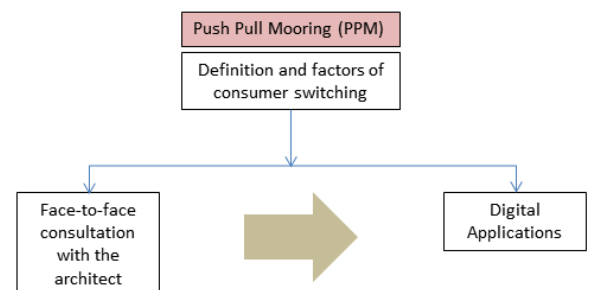


Figure 4 Moving architect consulting to digital applications.

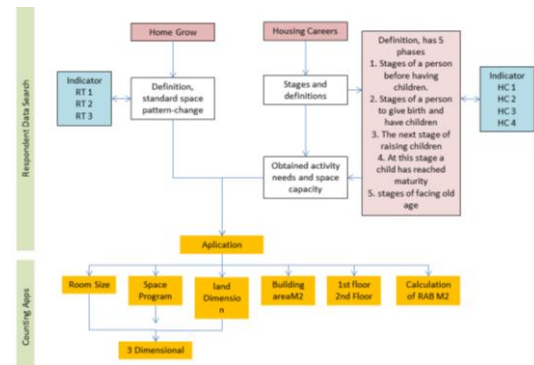
Table 2. Research indicators and instruments

Variable	Indicator	Research Instrument	Reference
Housing Careers	HC 1	Starting a career as a worker	[3]
	HC 2	Looking for a simple house according to the needs (Young Family) and financial ability.	
	HC 3	Thinking about facilities for children's growth and development	
	HC 4	Need for old age facilities	
Home Grow	RT 1	How to develop a residential house that suits the needs of its residents	[9]
	RT 2	How to maximize land use	
	RT 3	there so that it can be maximized.	
Architectural Digital Applications	A 1	How can an application be used and the benefits can be for all people, especially the lower class?	[18]
	A 2	How an application can be a liaison between the architect (service provider) and the community (client).	
Push Pull Mooring	PPM 1	How customers can get Convenience, Good Communication, Quality	[14]
	PPM 2	How to create new services and good service	
	PPM 3	How to create competitive prices And new experiences and variations	

3. RESULTS AND DISCUSSION

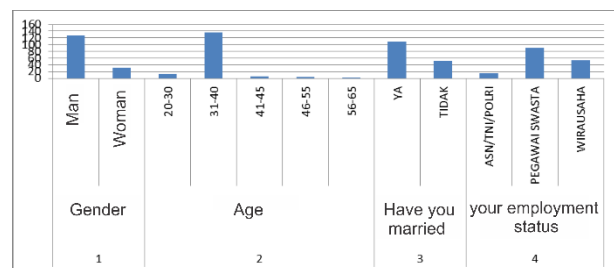
The results and discussion in this writing, the author provide views by combining based on computational research conducted Merrell [17] by conducting What phase is the initial data search on the family in? In the theory of housing careers presented [4,5]. So that the space program that the respondent wants is obtained other than that, the size of the site to be developed/house grow.

In the results and discussion of the sample questionnaire, it is carried out openly by looking at our sample floor plan layouts provide the following indicators of age, family needs, number of occupants of the house and facilities in the environment of course, judging from one's needs. Indicator type sex. Intended to find out secondary data from application users and show roles in the family.



(Private Docs)

Figure 5 Discussion scheme of growing home applications.



(Personal Doc)

Figure 6 Initial data 160 respondents.

From the data we obtained, it is dominated by age 30-40 years old. (Search for productive period literature) Status already married or not (minimum status as a couple) family). In figure 8 and 9. That in home ownership is influenced by the status of whether have a family this is due to the number of residents house that can affect the number of rooms needed. Other than that it can be influenced by the amount of space requirements.

Living room, family room, km/wc and bedroom. It is standard for family home ownership. Figure 5, in average employment status is dominated by civil servants, private employees and the highest are entrepreneurs.



Figure 7 Housing layout pattern in Sintang City, Kalimantan.

Ability in space requirements based on increasing the number of residents, by trying to maximize existing land (fig. 7). In figure 6 that in the questionnaire mentioned the importance of socializing the use of digital architectural applications that are easy, cheap and can answer some of the problems in home design grow.

Use of architectural applications for homeowners is the first thing in the design process, so that provide illustrations quickly and efficiently.

In figure 10 it is stated that it is very necessary architectural digital applications, this is offset by technology and information 4.0 which continues to grow and emerge several applications to facilitate the design process home grown.

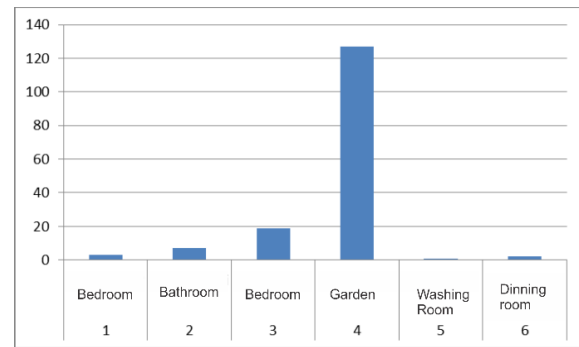


Figure 8 Results of respondents' space requirements.

The development of technology and information 4.0 in the current era can affect a person's patterns and activities, especially in the process of facilitating activities and information knowledge. Presented in tables 1 and 2 in this study, the use of digital architectural applications in the current era is very much needed and used easily for all circles of society.

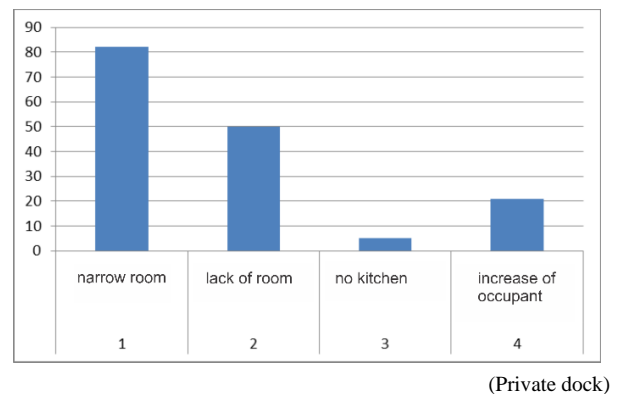


Figure 9 Multiple growing house factors.

PPM Push Pull Mooring (service, new variety experience).

In figure 10 the use of architect services in the process of developing a house grows usually requires the role of the architect so that the factors will be comfort, beauty, strength, and sustainable development process especially for the surrounding environment. In addition, the ease of information on price, experience, quality in design affects the socialization of the architect's role.

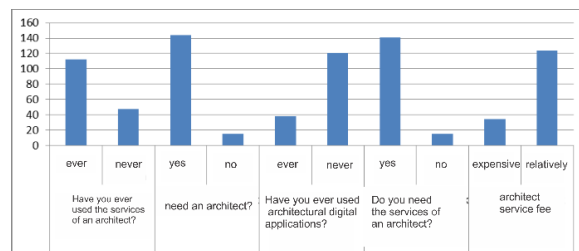


Figure 10 Application use, digital and the role of the Architect.

The importance of the services of an architect in the home design process is growing. Concern for beauty, strength, comfort and price for homeowners in the process of building a house grew into a principle thing for homeowners. The role of architect services, one of which is regarding the price of services, so far it is still not understood by homeowners. Lack of understanding of the price of architect services for homeowners who want to build a house makes the role of architect services in a relative position of 85% and 15% quite expensive.

The use of architect services so far is influenced by service, timeliness, price and the results of the architect's design, the Push Pull Mooring factor can affect the development of architect services. With the service factor, timeliness, price and the results of the architect's design, it is possible to switch to architectural applications and technologies. Ease of operation and affordable prices in architectural digital applications is one of the shifts in architectural services to architecture-based applications.

4. CONCLUSION

The concept of a growing house with a housing careers approach will be experienced by developing countries such as Indonesia, the need for housing increases every year. The use of a growing house application approach that is influenced by housing careers can help and simplify the design process for the lower middle class with building types 36, 45 and 50. In this study, digital application devices can be assisted by using digital 3D and can be further developed with Virtual Reality (VR) and Augmented Reality (AR).

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