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Anatomy of Lanting house architecture in Banjarmasin

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Abstract. The growth and development of city can be in line with efforts to strengthen the identity and character of its city. Currently, the riverbank architecture in Banjarmasin city is experiencing an identity crisis due to the changing pattern of people living from water based settlement to land based settlement. This identity crisis can be seen from the decreasing number and condition of Lanting houses, meanwhile there are no new development efforts. Lanting houses are part of riverside architecture that is closely related to riverside area that was the main problem in this study. The methodology used in this research is a case study methodology with an intrinsic case study. The findings in this study explain the anatomical principles of Lanting house architecture in Banjarmasin city confirm that there is no specific term attached to Lanting. The term used in the anatomy of Lanting generally refers to the local term (Banjar language) which is also used in the term of riverfront buildings and riverside houses. The architectural anatomy of the Lanting house can be traced from the anatomy of its shape, space, function, and order. The anatomy of space and functions is formed from the ability to process the internal space based on the financial ability/purchasing power of the occupants to the attributes of furniture in the building. There is a collective awareness that if there are more load in the building the more vulnerable the Lanting position.

1. Introduction

Fundamentally the growth and the development of the urban city can happen coherently alongside the efforts in strengthening the city's identity and characteristics. Nowadays, the architecture of riverside in Banjarmasin city is facing an identity crisis, it is caused by communities settling the pattern is changing from water-based settlements to land-based settlements. This identity crisis can be seen in Lanting houses condition and existence were the number of them gradually decreasing, meanwhile, there is no new establishment of Lanting. Lanting house is a part of the riverside architecture that strongly tied with riverside houses, titian, dock/batang, and jamban, and also the living culture of riverside communities [1]. Lanting house as one of the vernacular houses becomes historical evidence of settling and sheltering evolution by our ancestors in the past. From time to time, Lanting culture alongside Martapura River has been declining. The remaining Lanting houses are in slump conditions and not feasible to live. This result generated by many reasons, one of them is because of the transition of river function, the river borderline regulations, and also the difficulty of obtaining building materials used in Lanting house structure. If these conditions still keep occurring, Lanting house culture in Banjarmasin as one of Banjar traditional architecture will be disappeared. Lanting house nowadays is still experiencing transformation in its architectural form and space ordering with in the building [2]. The existence of Lanting house in this present is getting harder to find which causing significant concerns toward the extinction of Lanting



house [3,4]. Compare to previous years, the number of Lanting today is less than 20 units. There are 13 Lanting houses in urban city areas (Pasar Lama and Seberang Masjid districts), 4 units in Mantuil, and 2 units in Kuin district (which was diminished by the time this research took place), all the Lanting houses conditions in these areas tend to be decreasing. The house anatomy is the elements that form spaces within the house, where the house itself consists of many elements such as rooms that can contain activities requiring physical space qualification, utilization, and function [5,6]. Lanting house is a shop house that can float and move around in the water and can be used for living. A floating house, in other terms called as rafting house, is a traditional architecture style building which uses a raft structure and resides above the water [7]. Lanting still survives today because it still used by a community whose lives are tied to the river. Furthermore because of its flexible nature that can be functioned as 'water building' as well as 'land building', it is also movable, and in some places Lanting becomes a solution for land limitation problems. Lanting has a significant role as a linkage between rural and urban communities. Riverside settlement characteristic in Banjarmasin city embodies alley (local pathway) network systems with certain hierarchies such as large and small alleys, or large, small and private alley sheading to the housing unit [8].

2. Methods

The methodology used in this research is a case study methodology with a unique character (intrinsic case study). In category context, this research belongs to multi case-holistic which means there are many intrinsic case units and this research working to generalizing in order to obtain a general concept for the final results. This research is used observation and identification of 14 Lanting house units which spread in two areas of Banjarmasin city, where 10 units located in Pasar Lama district and the other 4 units located in Mantuil district, Pulau Bromo.

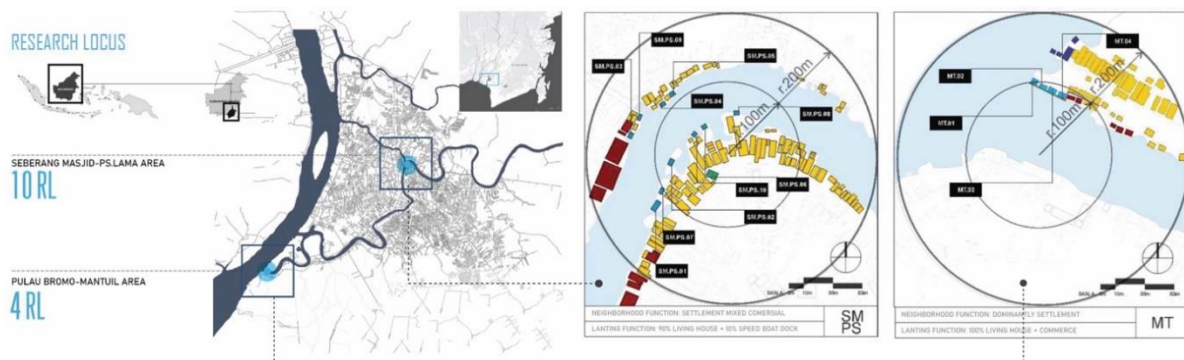


Figure 1. Research location overview.

The figure 2 consists of 14 units of observation characteristics described in location, address, data, owner profession, number of residents, building age, ownership types, and also Lanting houses origin.

Code	Picture	Address	Kelurahan	Kecamatan	Owner	Number of Resident	Profession	Building Age	Ownership Status	Reside Period	Location	Lanting Origin
SM.PS.01		Kampung BNI Sasirangan, Perbatasan RT. 4 & 5	Seberang Masjid	Banjarmasin Tengah	Hj. Yullana Iwan	8 people	Speedboat Enteprenuer	20 years	Perusahaan CV. YL	20 years	Siring Tendean	Inheritance
SM.PS.02		Jl. Seberang Masjid RT. 04 No. 64	Seberang Masjid	Banjarmasin Tengah	H. Mahyuni	2 people	Boat Driver	50 years	Self-owning	50 years	Seberang Masjid	Self-building
SM.PS.03		Jalan Pasar Lama No. 162 RT. 10	Pasar Lama	Banjarmasin Tengah	Linda	3 people	Merchant & Workman	11 years	Self-owning	1 year	Seberang Masjid	Donation
SM.PS.04		Jl. Panglima Batur No. 26 RT. 01 RW. 01	Antasan Kecil Timur	Banjarmasin Utara	Murjani	4 people	Boat Driver	38 years	Self-owning	5 years	Pasar Lama	Donation
SM.PS.05		Jl. Panglima Batur No. 08 RT. 01 RW. 01	Antasan Kecil Timur	Banjarmasin Utara	Sujarno	2 people	Boat Driver	40 years	Self-owning	25 years	Pasar Lama	Donation
SM.PS.06		Jl. Seberang Masjid No. 66 RT.04 RW. 01	Seberang Masjid	Banjarmasin Tengah	Jumani	2 people	TPS Worker & Night Worker	32 years	Self-owning	31 years	Seberang Masjid	Purchased
SM.PS.07		Jl. Seberang Masjid RT.04	Seberang Masjid	Banjarmasin Tengah	Alm. Jaladri Rasuna	3 people	Merchant & Freelance	58 years	Self-owning	17 years	Seberang Masjid	Purchased
SM.PS.08		Jl. Simpang Sungai Mesa Kabel RT.05	Seberang Masjid	Banjarmasin Tengah	Mansyah Yataih	6 people	Taxibike	27 years	Self-owning	27 years	Seberang Masjid	Purchased
SM.PS.09		Jl. Pasar Lama Laut RT.01	Pasar Lama	Banjarmasin Tengah	Rahmat	6 people	Freelance	20 years	Self-owning	20 years	Sungai Jিংang	Donation
SM.PS.10		Jl. Seberang Masjid No. 27 RT.04	Seberang Masjid	Banjarmasin Tengah	Hj. Asriah	5 people	Labor Worker & Cake Seller	20 years	Self-owning	40 years	Seberang Masjid	Donation
MT.01		Mantuil	Mantuil	Banjarmasin Selatan	Fakhrurazi	1 people	Merchant	30 years	Self-owning	20 years	Mantuil	Build New
MT.02		Mantuil	Mantuil	Banjarmasin Selatan	Masri	3 people	Merchant	50 years	Self-owning	40 years	Mantuil	Donation
MT.03		Mantuil	Mantuil	Banjarmasin Selatan	Kaspul Anwar	2 people	Unemployed	50 years	Self-owning	30 years	Mantuil	Donation
MT.04		Mantuil	Mantuil	Banjarmasin Selatan	Zulkifli	4 people	Labor Worker	50 years	Self-owning	10 years	Mantuil	Donation

Figure 2. Units of observation characteristics.

3. Discussion

The research produces physical and non-physical data basis which will be interpreted back into digital media (2-dimensional and 3-dimensional) to be traced and analyzed comprehensively to formulate its architectural anatomy. The followings below are Lanting house anatomy analysis results, reviewed from the anatomy of form, space, function, and order.

3.1. Lanting form anatomy

Generally, Lanting house forms consist two simple platonic solid shapes, triangle for roofing and rectangle for space/wall building shape. In architecture scope study, the observed Lanting house forms are the common shapes which often found in traditional and vernacular architecture, especially in tropical architecture context. Its form of sloped roof as a response toward climate and weather. The space forms which used with considerations of certain functions become the basic base in architecture vernacular discussion.

The analysis results show that there are several principles and considerations in constructing Lanting house forms:

- Use the simplest composition in constructing vernacular house. The dimension module always appears repetitively and the floating system is always changeable, adjusting the material availability and owner economy capability.
- Rectangle building module with 1:2 ratios where the widest sides facing towards the river and land.

- The building length dimension with 3m multiple and 9m on maximum, with considerations of the accommodation easiness and the material availability in markets, these factors become the determinant square area of the building also its length and width.
- The building length determined by floating material length dimension such as log wood or bamboo, with the maximum length usually up to 9 meters.
- The width average is 6m which based on the knowledge in building column/*tongkat*, truss, and wood plank module used in floor and wall.
- The roof slope does not have certain standard, however its main average is under 30° considering metal roofing width and length (2.4m) which generally layered in 2 pieces (4.5m).
- Some room/space extensions affecting the addition of building forms, usually it still placed in Lanting bed areas. Usually the extensions are in rectangle shape with service function (kitchen/toilet).

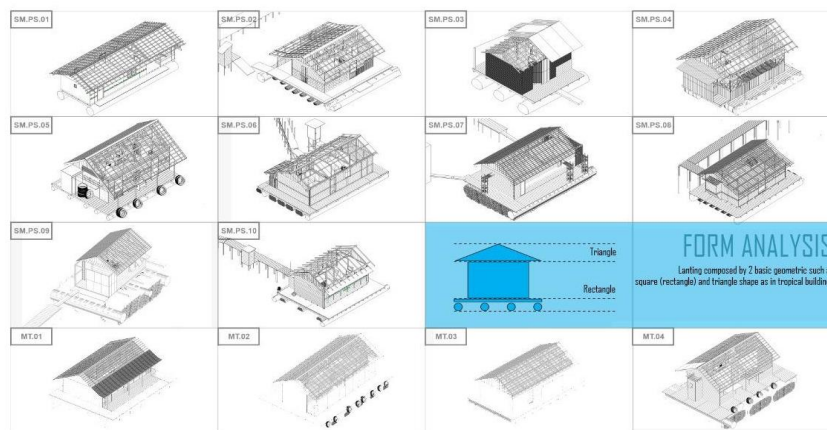


Figure 3. Lanting form anatomy analysis.

Based on form analysis of Lanting house and its forming aspect findings, the knowledge in building with efficiency basis (not wasted/*kada tabuang*) and the material availability, are the main factors on influencing Lanting forms. The conditions above show a formulation that if knowledge in building Lanting based on the efficiency and changeable material principle, there are possible chances that Lanting can transform and adapt into new knowledge both in constructing and material use. This state explains the aspect of Lanting forms embody the adaptive-spontaneous principle.

Adaptive-spontaneous principle is a finding theme where there are some modified forms adjusting into specific factors, they are happened unintentionally and thoroughly (spontaneous toward problems). In this research, this terminology is appointed as building form analysis finding.

3.2. Space anatomy and Lanting function

Among all of the units of observation in general, space and function analysis have function uniformity, such as private, semi-public, service inside building core, and service and public outside building core.

The finding of anatomy and Lanting function can be detailed with percentages of space function, therefore the results are:

- Private space is more dominant and can be recognized with the presence of bed or bedroom with curtain covering.
- Private space is occupying 40% and service takes 20% from Lanting house total area.
- Semi private space is a space between service, public, and private which functioned as multiuse space, which takes 20% from Lanting house total area.
- Public space in a form of terrace occupying 20% from Lanting house total area.

- Lanting house program which consists of service, public, private, and semi-private spaces have quite high permeability characteristic, hence the differentiate between spaces are distinguished with furniture, curtain, or perceptually by the owner.

Based on function and space analysis towards 14 units of observation, it can be concluded that the ability to construct inner spaces based by owner financial capability on buying furniture for the building. There are collective realizations on weight calculation, for example if there are too much weights inside the building, it will affect Lanting position and can be risking to its tilt. This collective realization usually showed by owner toward surveyors, whom suggested to enter Lanting respectively so that the building will not be overload (the calculation based on owner intuition).

Space permeability characteristic causing spaces inside Lanting house linked to each other, for example, service furniture (kitchen) can be placed in semi-private or private area. Meanwhile semi-private furniture strongly related to private furniture (i.e. wardrobe can be placed not in private zone). By this finding, the factors which affect space forming based on needs and owner financial capability, also the perceptual deal by Lanting occupants on determining private, semi-private, service and public zones.

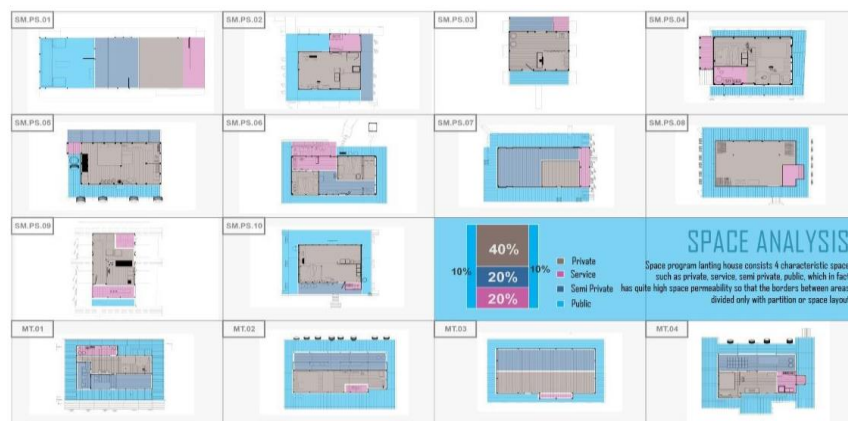


Figure 4. Space anatomy analysis and Lanting function.

These multiuse space principles with permeable characteristic become the base finding basis on space utilization inside the building. The principles explain that absolute space setting do not exist in Lanting, both in space category or furniture placing. Permeable characteristic in multiuse space becomes coherent with many activities that take place in one room and linked to other spaces with perceptual borders by owner. The multiuse terminology appointed as theme finding of function and space analysis in this research.

3.3. Ordering anatomy

Ordering anatomy analysis of Lanting house can be concluded that there are several general components in forming Lanting house, such as:

- Lanting only constructed by log woods as basic ordering. This condition can be stated as “Lanting” when several log woods are arranged and tie them together, and it can float on the water.
- Lanting which constructed by log woods as basic ordering and the addition of functions above it, are called as basic development. This condition can be found in observation unit that usually functioned as house and shop.
- Lanting which constructed by log woods as basic ordering + additional function + the addition of more complex spaces, called as Lanting with space extension. This condition can be found in observation unit which already has the need of supporting spaces, more complex than just single function.

The followings are the structure components in building Lanting house:

- Floating foundation; the floating foundation is a foundation which can float Lanting with several material types such as logwood, bamboo, and plastic drum. These three materials can be combined together as the main floating structure, also added with plastics collected by local communities as spontaneous anticipation if the house is shrinking caused by the decreasing of float density. Betel horizontal wood plank construction; this type of construction adopts local wisdom that converted in constructing Lanting wall. There are some of additional finishing for wall such as metal, tarpaulin, and triplex, which can be afforded by owner to do Lanting minor repairing.
- Gable roof construction with metal finishing; gable roof construction is an efficient construction and knowledgeably the method are the simplest one in Banjar traditional architecture hierarchy. Roof angle does not have standard but the slope determined by metal length (2 layered), the average is 4.5m with truss 4-6m.

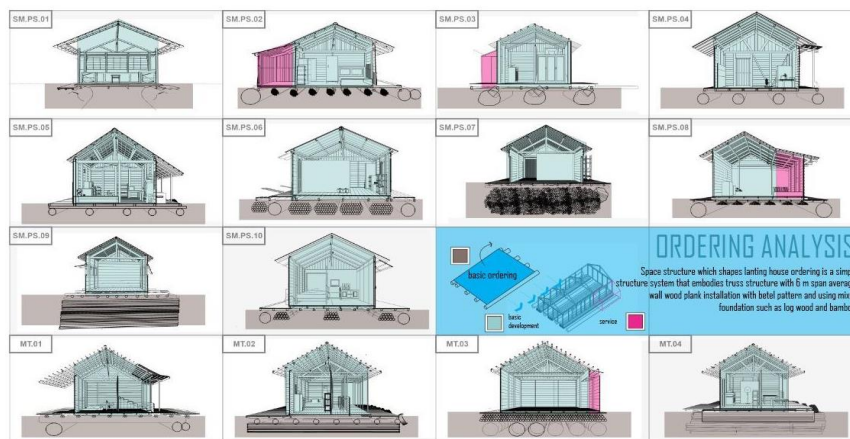


Figure 5. Lanting house ordering anatomy analysis.

Based on ordering analysis, it discovers the strong relation between historical variable and building typology. Generally, the ordering of Lanting mass influenced by user needs. These basic needs distinguish Lanting function between one and another. Lanting as basic ordering in this present is hard to find, meanwhile Lanting with basic development practically is the representation of research observation unit nowadays.

The factors affect the rising needs that generate ordering complexities, caused by possible reason of the Lanting moving from one place to another that influences the user needs. This moving pattern becomes finding basis in this ordering analysis results.

3.4. Lanting house forming components anatomy

Lanting anatomy Banjarmasin City based on tracing and processing digital data, hence the forming structure of Lanting in Banjarmasin City can be mapped comprehensively. Based on historical tracing and observation results, it obtained the component systems of Lanting forms in Banjarmasin City, which in overall have the same terms with vernacular buildings in the riverbank and riverside.

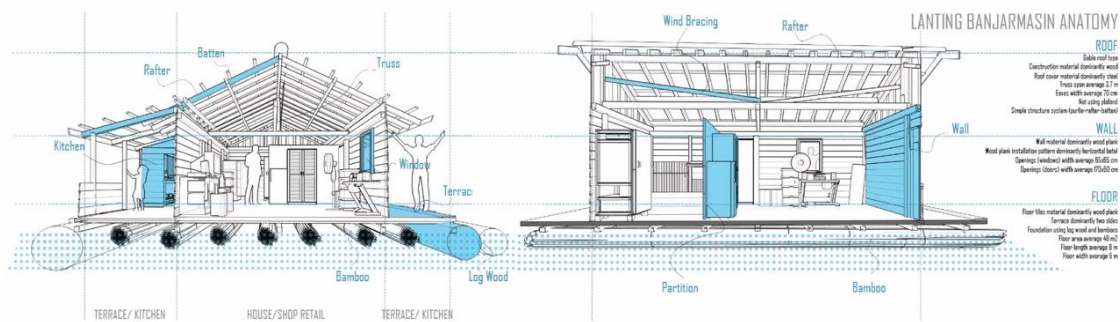


Figure 6. Lanting house anatomy: transverse and lengthwise sections.

There are some terms attached to Lanting, as can be seen in transverse and lengthwise sections picture (figure 6), with details such as:

- Building Structure Anatomy: 1) Foundation/ *batang-Lanting*: constructed by bamboo/ *paring* and wood log as foundation, 2) Wall/ *tawing*: constructed by wood structure, wood planks arranged in betel horizontal formation, 3) Roofing/ *hatap*: constructed by wood structure with metal finishing
- Architecture Building Elements Anatomy: 1) Door/ *lawang*: wood door with metal or wood plank finishing, 2) Window/ *lalunggang*: wood window combined with glass or massive wood plank, 3) Partition/ *pahalatan*: temporary partition, can be piece of a curtain, a furniture, or triplex wall.
- Inner Space Function Anatomy: 1) Terrace/ *pelataran/ palatar*: terrace building with 1m width, wood construction, *pelatar* position located around the building or only on one side, 2) Kitchen/ *padu/ padapuran*: space decided between occupants as service area which usually located in the inner corner or outer side (terrace), 3) Sleeping area/ *paguringan*: space marked by the presence of bed with or without partition.

4. Conclusion

The anatomy of Lanting house architecture in Banjarmasin can be traced by form, space, function, and ordering anatomy. Simple *platonian solid* forms such as triangle shape for roofing and rectangle for space/wall building. *Lanting* house forms influenced by some factors such as knowledge in building, space efficiency, and material availability, meanwhile the spontaneous the adaptive principle becomes the method to preserve forms and living existence in Lanting house.

Space and function anatomy constructed based on the competence in forming inner space, based on financial capability on buying furniture for the building. There are collective realizations on weight calculation, for example, if there are too many weights inside the building, it will affect the Lanting position and can be risking to its tilt.

Absolute and hierarchical space setting does not exist inside the Lanting house, both in space category and furniture placing in it. The space principles that need to be established are spaces that capable functioning as multiuse space, embody permeable characteristic which becomes coherent with many functions/activities that take place in one room.

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References

- [1] Aufa N, Muchamad B N and Mentayani I 2016 Konseptualisasi Pengetahuan Lokal Masyarakat Banjar Dalam Membangun Di Lingkungan Lahan Basah *Prosiding Seminar Nasional Lahan Basah* 437–454
- [2] Dahliani D, Faqih M and Hayati A 2015 Changes of architecture expressions on Lanting House based on activity system on the river *Hist. Res. J.* **3** 1 1–8
- [3] Rahman M A U R 2014 Pelestarian Rumah Lanting Berlandaskan Budaya Sungai Masyarakat Kota Banjarmasin *E-Journal Grad. UNPAR* **1** 2 221–231
- [4] Lubis M S, Harjoko T Y and Susanto D 2019 Lanting' as a way of life: A legacy of riverine culture and architecture in the present urban life of Sintang City, West Kalimantan *IOP Conf. Ser. Mater. Sci. Eng.* **523** 1
- [5] Subagijo E and Poerwadibroto P 2016 Manual Anatomi Rumah Sehat Layak-huni (Liveable) di Perkampungan Kota *J. Spectra* **14** 1–18
- [6] Susanto D and Lubis M S 2017 Floating houses 'Lanting' in Sintang: Assessment on sustainable building materials *Iopscience.Iop.Org* **8** 68–74
- [7] Denpaiboon C, Tohiguchi M, Matsuda H and Hashimoto S 2000 Typology and Life Style Analysis of The Raft House (Ruan Pae) In Riverine Settlement In Thailand *J. Archit. Plan. Eng.* **7** 533 173–180
- [8] Hadinata I Y 2017 The Characteristic Of Corridor Street Space Case Study: The Corridor Of Jalan Veteran Penggal Klenteng – Jalan Simpang Ulin *Int. J. Livable Sp.* **02**