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BIGSTAR

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**BUILDING
INTERNATIONAL
GATEWAY THROUGH
SCIENCE, TECHNOLOGY
AND ART**

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Bandung, 27 - 29
OCTOBER 2013

Character Building
UNIVERSITY





International Seminar on
Building **I**nternational **G**ateway
through **S**cience, **T**echnology, and **ARt**

27 – 29 October 2013
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Message from the Director of Politeknik Negeri Bandung

Assalamu 'alaikum warahmatullahi wabarakatuh

First I would like to thank the Ministry of Foreign Affairs, the Ministry of Education and Culture, and Government of West Java for its support to realize cooperation between countries through more intensive science, technology, art and innovative education

High appreciation also delivered to all ambassadors and representatives present in this international conference with the spirit of friendship, peaceful, and prosperity of mankind.

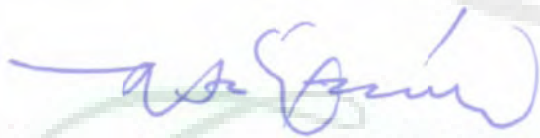
For this purpose, Politeknik Negeri Bandung (Bandung State Polytechnic) holds an international conference to discuss current issues in science, technology, arts, and education. It is expected from this conference can be explored innovations continuously updated and good practices which will be held every two years. The conference has a universal theme Building International Gateway through Science, Technology, and ARt – BIGSTAR.

On this occasion, we are also invited to all the parties to strengthen BIGTAR the next 2 years. BIGSTAR can be held outside Indonesia within the same spirit.

Finally, have a pleasant conference and I hope you enjoy your staying in Bandung.

Wassalamu 'alaikum warahmatullahi wabarakatuh.

Director of Politeknik Negeri Bandung



Ir. Mei Sutrisno, M.Sc., Ph.D.

Remarks from the Chairman of the Conference

Assalamu 'alaikum warahmatullahi wabarakatuh

T

hank to almighty God for the first international conference BIGSTAR can be implemented. BIGSTAR aims to foster innovation among countries through science, technology, arts, and education.

A wide spectrum of fields of interest is being targeted in this conference since they influence each other.

I thank you to all those who have contributed to this activity. I invite the ambassadors to continue BIGSTAR outside Indonesia which will expand the horizons of participants thus strengthening the relationship among countries can be accomplished. The conference is also expected to be a quarry for other activities so that the goals can be accelerated.

Finally, on behalf of the entire committee I apologize if during this conference there is a shortage and create discomfort and because BIGSTAR is ours, improvements will continue to be done on the implementation of the next BIGSTAR activity.

Wassalamu 'alaikum warahmatullahi wabarakatuh.

Chairman of the Committee BIGSTAR 2013



Ir. Sumargo, Ph.D.

AGENDA OF SEMINAR

27 October 2013 - Savoy Homann Hotel - WELCOME DINNER

Time	Activities	Person Incharge/ Other activities
18.45 - 19.00	Registration	Committee
19.00 - 19.05	Opening	MC
19.05 - 19.12	Welcome Speech from The Director of Bandung State Polytechnic	Ir. Mei Sutrisno, M.Sc., Ph.D.
19.12 - 19.20	Speech from Reviewer	Prof. Konrad Gell
19.20 - 19.30	Traditional Dance as welcoming symbols	Tari Merak Polban
19.30 - 20.45	Table Top of Director of Polytechnics and other Stakeholders	Acoustic guitar/ singer/ Polban Choir/ short movie Bandung
20.45 - 21.00	Closing; information for conference	MC

28 October 2013 - Savoy Homann Hotel - OPENING CEREMONY, KEYNOTE SPEAKERS, LUNCH and BANDUNG CITY TOUR

Time	Activities	Person Incharge/ Other activities
08.00 - 08.30	Registration	Committee
08.30 - 08.35	Opening	MC
08.35 - 08.45	Conference report	Chairman, Sumargo
08.45 - 09.00	Opening Speech	Minister of Education and Culture*
09.00 - 09.05	Angklung Symbolic opening	Minister, Director, Chairman, followed by Angklung team
09.05 - 09.15	Angklung performance; Song for opening ceremony - We are the world	Angklung Polban
09.15 - 10.15	Keynote Speaker I	Prof. Dr. Konrad Gell
10.15 - 10.45	Coffee break	The Committee
10.45 - 11.45	Keynote Speaker II	Dr. Martin Ellioth-White
11.45 - 13.00	Lunch Break & Pray	The Committee
13.00 - 14.30	Bandung City Tour (photo stop heritages)	The Committee
15.00 - 17.00	Saung Udjo traditional performance	The Committee
17.00 - 18.00	Return to hotel	The Committee

* tentative

29 October 2013 - THE CONFERENCE SESSION			
Time	Conference Room 1	Conference Room 2	Conference Room 3
09.00 - 09.10	Information of the conference	Information of the conference	Information of the conference
09.10 - 10.10	Conference pararel session	Conference pararel session	Conference pararel session
10.10 - 10.40	Coffee break	Coffee break	Coffee break
10.40 - 12.00	Conference pararel session	Conference pararel session	Conference pararel session
12.00 - 13.00	Lunch and Pray	Lunch and Pray	Lunch and Pray
13.00 - 15.00	Conference pararel session	Conference pararel session	Conference pararel session
15.00 - 15.30	Coffee break	Coffee break	Coffee break
15.00 - 15.30	Three Best Paper and Poster Award		
15.30 - 15.40	Closing speech		
15.40 - 15.50	Photo session		
15.50 - 16.00	Certificate distribution		

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TRADITIONAL BUILDING CONSTRUCTION MODEL DEVELOPMENT AS GUIDANCE FOR DESIGN A LIVING HOUSE ETHNIC-BASED IN NORTH SUMATRA

Putri Lynna A.Luthan, Irma Novrianty Nasution, Syahreza Alvan, Kemala Jeumpa

ABSTRACT

North Sumatra is located in Indonesia's West side was an area which had a rich of ethnic diversity. The problem that often arises is, a). Fading knowledge of the values embodied in traditional buildings this time, b). Many buildings that used local level ethnic elements, but feared designed and made without raw guidance, c). There's many houses founded which still retain the cultural values with the ethnically specific reason, but feared the construction would be more wild and unfocused. From the problems that arised researchers conducted research with the aim of identifying the ethnic cultural values that exist in Mandailing and Malays ethnics. Results of research is: 1). Religious system manifested in the selection of elements of location, orientation, ornamentation, construction systems, and a sketch of the spatial arrangement, 2). Kinship system was realized on the elements of the configuration space, the amount of spaces fit the needed of residents and community life, as well as the completeness home; customs hall, granary, and a yard wide, 3). Philosophy of life manifested in the form of the element and the completeness of the space where all the activities of ethnic unity in the community, both individually and socially, 4). Leadership systems form the ornamentation patterns found on buildings, such as the form of the pole, the ornaments on the roof of the porch-railing, and the size of a large house viewed vertically or horizontally, the number of steps and the pole, the pole location or position and 5). Social system formed in the selection of roofing, decorative use or ornamentation, and composition of space in traditional home. Further research will be carried out mapping the concept of traditional buildings in North Sumatra.

Keywords: Traditional, Buildings, Mandailing, Malay, Guide Dwelling House

1. INTRODUCTION

Indonesian archipelago with diverse ethnic, cultural customs and traditions that was unique. Indigenous culture and tradition and a legacy was still maintained today. One of the unique island traditions was Sumatera, there are eight ethnic groups who are native of the Toba, Karo, Angkola/Sipirok, Mandailing, Malay, Nias, Pakpak /Dairi and Simalungun. The eight ethnic groups spread across the east coast, the highlands and the west coast of North Sumatra. Among the ethnic groups that exist, selected two ethnic groups of concern in the study of Mandailing who in habit the western coast of Sumatra are both ethnic Malays who inhabit the eastern coast of Sumatra. The issue arise is a study was there concern over the values of local wisdom that was slowly lost/extinct due to cultural development. It is characterized by the emergence of the phenomenon of rebuilding traditional buildings by some people who have the ability financially as efforts uphold the identity and cultural identity (Nasution, 2006). However, the new form was very much different from the traditional form. The desire to establish the ethnic communities living in the form of ethnic-based and newer way was the top priority factor in the survival of traditional culture preservation. Traditional building was a building that realize based on cultural value, and then it need to be pursued in the development of understanding of cultural values in physical form. The goal was to prevent the development of wild and troubling future prospects of traditional architecture. The pattern sare traditionally though tofa design was a great way to see the reality of the past, predict the future possibilities for designing the ideal present. With a cleared and focus deffort, developing the potential of traditional and can be directed broadly toward extincti on condition of the building can be addressed early. As mentioned Rapoport (1969:46) those cultures was a major factor in the process of form, while other factors such as climate, location and geography, politicand economic was a second factor. These conditions provide an opportunity for scholars and researcher stounder take the development of science and technology related to the continuity of traditional architecture and the conservation of cultural values that exist in the building.

Research problems in this research are :

- a. People knowledge's of value in traditional building was faded,
- b. Many buildings in district level those applied ethnic element's but it was worried to build and design without acknowledgement,
- c. There's many living house was maintained the ethnic-cultural values with some specific reasons, nevertheless the construction would be more wild and unfocused.

Research objectives in this research are :

- a. To identifying of the cultural values and traditional building concepts in Sumatera Utara,
- b. To developing concepts of traditional building construction toward a living house building,
- c. To planning a model as a guide to design an ethnic-based living house in Sumatera Utara.

2. METHODOLOGY

The research will provide new insights in the areas of research pertaining to the cultural values of ethnic and architecture. Research directions will outline the cultural values of ethnic and linking them with material culture (traditional architecture), in order to obtain traditional concepts can be developed for the interests of the present and the future. These concepts will collaborate with the values prevailing a the general architecture will be summarized in to a model and guide for architectural design.

The research was conducted in areas that can still be traced ethnic cultural heritage architecture. The research are located in the Madina district Mandailing, and the city of Medan, North Sumatra. The research was conducted by observation, documentation, and interviews with the owners as well as review of the existing literature on the construction of the building. Construction forms will be used as a reference for designing homes based ethnic North Sumatra. The population in this study is the number of traditional buildings and Mandailing and Malays ethnic in North Sumatra. Intake forms of traditional buildings were done by using *purposive sampling* (Hadi Sutrisno, 1982). This selection is performed to choose the form of traditional buildings as cultural artifacts that are considered to have certain values and easy to find in the field, it looks visually aesthetic value and has speakers who can give explanations to the research team.

Research Methods

Population in this research was chosen by the numbers of Mandailing and Malay traditional building's that can found and it has existence in North Sumatra which physically it has like in common. Sample withdrawal by doing on community living house and inheritance of glorious kingdom in a past. Sample election is related to form, fully equipped construction, visually appearance, and the informant. Data collecting do by literature reviews, interview, observation in a field that is Mandailing and Malay traditional building's.

Data Analysis Method

Data result's of interview, literature reviews, and observation sort by dividing into 2 parts namely data that related to building concepts as non-physically that is values, and data as physically that is architecture and construction. Data processing in a qualitative method's with analytic description that is doing by data analyze from the field then connected to literature review and interview results by the informant. Connectivity of value concept's and construction analysis seek for a relation to have a final result which is a standar of traditional building concept's can be a model and guidance in created an ethnic-based building.

3. RESULTS AND DISCUSSION

Based on the research goal was to identify the values of ethnic cultures, the results achieved are as follows:

3.1. Ethnic cultural values on Mandailing traditional house

Mandailing region can be divided into two areas, which based on the spread of the clan (clan Lubis; Mandailing Julu and Nasution; Mandailing Godang) and the hierarchical position of the river (Julu; upstream and dJae; down stream). Each region has some of the traditional buildings which are still preserved. There are buildings that have been restored and maintained sustained by the government, there was also a traditional building that was rebuilt by the family who was a direct descendant of the kings in the past in Mandailing. The buildings are mostly maintained by the government still maintained its authenticity, while the newly rebuilt building was a relatively new building, either in terms of material selection, design, construction and the selection and implementation. The buildings were recorded by researchers from the results of observation and direct search can be described as follows:

Bagas Godang in District Mandailing Godang



Figure 1 : *Bagas godang* in Mandailing Godang

Source : Luthan, et.al. 2013

Bagas Godang in District Mandailing Julu



	
<p><i>Bagas godangin the vilage Habincaran</i></p>	<p><i>Bagas godang in the vilage Alahan Kae</i></p>
	
<p><i>Bagas godangin the vilage Kayu Laut</i></p>	<p><i>Bagas godangin the vilage Tolang</i></p>

Figure2 : *Bagas godangin Mandailing Julu*
Source : Luthan, et.al. 2013

People's home in Mandailing





	
<p><i>People's home in the vilage Sibanggor</i></p>	<p><i>People's home in the vilage Hutapungkut</i></p>
	
<p><i>People's home in the vilage Habincaran</i></p>	<p><i>People's home in the vilage Alahan Kae</i></p>

Figure 3 : *People's shomesinMandailing*
Source : Luthan, et.al. 2013

Mandailing houses in different forms between the king and the people. The difference was obvious from the shape of the building mass, the amount of space, a pattern room setup, the application of decorative, roof shape and dimensions. Generally, the king is in a complex that was equipped with yard (experience alternating), granary (*sopoeme*) and customs hall (*sopogodang*). While the common people don't have such provisions. In terms of structure and construction, homes in Mandailing using stage house construction with natural wood and stone structure as a foundation. Vertically, the house is divided into three parts, namely parapi (attic) as *banua parginjang*, bagas (the body) as *banuatonga*, and *Tarumani bagas* (under the house) as *banua partoru*. The third section focuses on *Pantartonga* house (living room) that is part of the house that is considered sacred, and at the center was founded pole or pole *tonga*. In general, tradition also dictates live and behave according to social and cultural value sare up held as a guideline in social life. This applies to communities Mandailing. This community has a philosophy of life *holong* and *domu*, the love and affection among fellow community members Mandailing. Mandailing community is a group of people who have to enforce the nature of truth and love of peace, shared values are strong, and uphold the values of unity. Shared values form a very strong influence on the spatial arrangement of traditional houses Mandailing (*bagas godang*), which are spaces that can accommodate all the activities of togetherness in the community.

The values in the social system known as *dalian Natolu* Mandailing, namely the three pedestal. The social system serves as a tool to implement the custom in public life Mandailing. In a social system Mandailing not knew social stratification. Social rank used to distinguish the role and position of the king with the royal family, the king and commoner maid. This level only distinguishes the size and completeness of its traditional home. For example, the common people should not use the same roof form with the king, and should not use decorative. Social systems are also seen in the pattern of organization of space in the building *Bagas Godang*.

In turn the community activities run smoothly and orderly as custom will be the embodiment *holong*, then in the past every village community has a government run institution. The agency led by figures of traditional leaders called *natoras* *Namora* and headed by a person with the status of kings *Panusunan* (head of the village administration in the parent) or king *pamusuk* (head of the village administration in children). And each government agency runs autonomously. Mandailing political life of society is symbolic values and customary law sare up held in every joint life. King is a figure that is considered important and respected presence; protect the people with a fair and loving. The king is the center of social and cultural activities Mandailing, while *Namoranatoras* is an institution that is considered a major role for the survival of an indigenous village. This condition is the existence of the building foundation established *godang bagasse*, which is a symbol of tradition, legal and social Mandailing. In the context of architecture, was manifested leadership system of village-centered patterns of order and *bagasgodang* an orientation center, as well as in the form of an octagonal pole *bagas godang* which symbolizes the king as the center of the traditional village leadership in all directions of the compass (eight directions). Mandailing community structure is patrilineal. Kinship group was formed by blood relationship (blood ties) and marital relationships (affinial ties). Kinship group called clans based on blood relations (clan), a clan relative in so-called *kahanggi* (brother and sister). Kinship group sare for med based on marital relationships comprised of grantor daughters in marriage called *mora*, and the girls in the group receiving called *anak boru*. In relation to architecture, family structure and kinship system explain show to relate the pattern and form specific interactions that can be recognized in the patterns. Parents-child interaction was in the sphere of family privacy in a pattern to form a hierarchical order of the house. While the kinship system were describes the relationship of the individual's role in the family. Life and public confidence in the past Mandailing embrace animistic belief that ancestral spirits. Along with the development and progress of information, Mandailing region has developed quite obvious specially belief system problems. After entry of the Padrito Mandailing around the 18th century ADs/d19th century AD, the

Mandailing began slowly turning towards religious beliefs of Islam. Islamic influence is quite large influence public life in Mandailing. Similarly, the remnants of previous belief are still there and still preserved as a relic of the ancestral culture. In Mandailing society, religious influence shape, sketch geometry, spatial arrangement and orientation of the house. Mandailing public confidence towards the Creator, the natural divide into three parts called *banua* (world). And application of the concept is evident in the form *banua* home Mandailing community. In addition *banua* concept, the concept of home in Mandailing determined based on the location and direction of flow of the river, as well as differences in soil surface elevation (contours), both in the area of micro (*huta* / village) or macro (region). Similarly, the sun is believed to be the source of life. Direction came and the sun as a guide for the home as a center of orientation, and preferably every *bagas godang* oriented east ward to the sun and should not be.

3.2. Ethnic cultural values on Malay traditional house

Sumatra Malay coastal areas were scattered along the east coast of Sumatra and directly adjacent to the Strait of Malacca. Deployment areas ranging from Leidong kingdom, the kingdom Blade, Coal royal, royal Pinang City, Deli kingdom, and the kingdom Langkat. Current condition of the traditional buildings on the east coast of Sumatra was almost extinct the ages. Each region has some of the traditional buildings which are still preserved, and the traditional houses are still found in many Langkat regions, particularly in the Stabat village. There are buildings that have been restored and maintained sustained by the government and still maintained its authenticity

There are also traditional houses are still standing and preserved Malay community as a matter of pride as part of a Malay but has undergone changes in terms of material selection, arrangement and pattern of land use, and construction technology. The buildings were recorded by researchers from the results of direct observation and search can be seen in Figure 4 s / d 7 following.

Malays house in the village of ol West Stabat Rumah of District Wampu




		
Family Residence Hatta	Family Residence Rusdi	Family Residence Nurjanah

Figure 4 : Malay houses are still well preserved by the testator in the western village of Stabat
Source : Luthan., et.al 2013

Malays house in the village of Stabat District Wampu

	
Family residence	Family Residence

Figure 5 : Malay houses are still well preserved by the testator.
Source : Luthan, et.al 2013

The house stayed in the village Malays Stabat

	
The house stayed in the village section of the occupation Stabat Dutch government restored	Dwelling ethnics Malays who have been restored by the owners independently

Figure 6 : Residential ethnic Malays who have restored both private and government funding
Source : Luthan, et.al 2013

DeliSultanate PalaceinMedan


Deli sultanate Palace

Figure 7 : Exterior Sultanate Palace Deli
Source : Luthan, et. al 2013

In the Malay community, the community consisted of the nobility and the common people. The nobility are the ones who first embraced Islam because a long with the merchants of Arab, Gujarat and Parsi. Along the development era, merchants mingled with the existing ethnic Malays on the east coast of Sumatra and open Islam as a township neighborhood association Malay community, home to measure a person responsible for his family or not. Physically, home to the Malay community can meet the requirements and interests of indigenous inhabitants, and the home must also be able to bring joy, comfort, peace, and tranquility. Malay house is built on three (3) main things that resam indigenous, local climate and Islamic law (husny, 1986; within Novalinda, 2007).

Traditionally, Malay house has a unique and distinctive characteristics as a result of cultural assimilation result of a long history; indigenous Malay culture is rooted in East Sumatra, influenced by Hinduism, Buddhism and Islam, the ninfluenced by the cultures of ethnic groups grow-developed around him and finally by foreign cultures(West) others. Overall this is the element that ultimately 'crystallized' and bore East Sumatra Malay culture including traditional home. East Sumatra traditional Malay house is very simple, stately and rich like traditional houses around him, notevenas rich and grand as traditional Malay house other, but th euniqueness and distinctness to be interesting. In addition, the traditional Malay house East Sumatra current condition is very pathetic. Most of the traditional houses have vanished from the face of the earth, many are just in ruinsand order, and notinfrequently also still maintains its presence in order to protect the cultural heritage of the ancestorsor predecessors.

Malay house form consists of the king or then obles, and the common people. Manor house usually has alarger size with alot of poles corresponding status of then obility, and the dignity that makes the building. Typologyof traditional Malay house is a house on stilts or berkolong, and has a high poles ± 2 meters from the ground. Malay house known as'the poster' with the types include: the six poles, house porch polesexix, and twelve pole home or home porch.

The pillars of the house have a symbolicre presentation of indigenous Malays. There are other types of poles on Malay architecture, among others:

- Coloumn penghulu; pole located between the front door with a pole in the series right corner façade. The pole symbolizes that the house was set up under the provisions of the customs and life in the family shall be supported by other family members.The center pole; pole located between the other poles, pole exists between the series and the old pole. The pole symbolizes the child's relatives and wife.Poleseries; polelocated atthe four corners ofthe main building, andshould not be continued from the ground up ward.The pole symbolizes the'four some progenitor' or 'parent four some', and symbolizes the four directions of the compass.
- Old pole; major pole located on the right and left ofthe center door, or a pole located in the center of the building that was first enforced. The pole symbolizes the old house, the leader in the building, families and communities.
- Pole twelve; the pole combination were 4 poles, 4 poles middle, 2 pieces of the old pole, 1 pole prince, and1 piece pole flunky.

Pole form containing the symbol that is traditionally associated with religion and beliefs heldpublic, including in relation tothe natural environmentand the direction of the wind. It was depended on the size of the pole-small house. Fo rmanor houses or people who can afford, size and squaremade the carved poles, while for ordinary people made round mast pole and only series who has a squareshape.

Horizontally, in a space was prepared in accordance functions and activities. The composition consists of a frontroom, a formal reception roomand formal events; center, space for interaction between family

members and the rest; backside, where food preparation (kitchen). Currently was equipped with an arathroom as the demands of the Malay community life no longer give priority to the river as a place to move bathing, washing and toilet facilities. Order in the Malay house is divided into a low floor height. Usually the family room are placed on a high floor, in the rooms organized for death ceremonies and other events crowd. Mean while, the break room, work and welcomes guests placed on a low floor. This suggests that families and more main stream activity in the pattern of Malay social order. Arrangement of space in the Malay house from front to back can be seen in Figure 8 below.

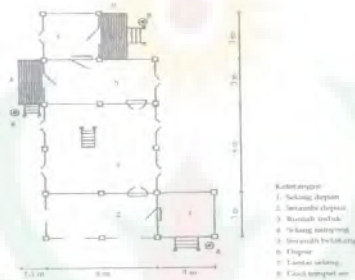


Figure 8 : Malay Traditional House Plan about 1750 (Mahyudin, 2003; in Novalinda, 2007)

From the observation and tracking, no longer met the low floor height difference on the traditional Malay house is clear to distinguish the function of the space between the foyer and family room. However, the space part of the kitchen floor is made much lower than the family room as is usually part of a new building or addition that is made with a more contemporary building technology. In addition, there is a concept counter changed from the traditional and there are similarities in each case that there are more private space with a bedroom functions. The addition of this space does not necessarily change the main form of the house, but to create an additional partition of the new material. Number of steps still according to the rules in Malay culture, is an odd number with the addition of risers are made with new material and the addition is done to maintain compatibility governed by Malay custom.

4. CONCLUSION

The cultural values underlying the shape and character of traditional buildings in North Sumatra, especially those found in Mandailing and Malay ethnicity is:

Religious system manifested in the selection of elements of location, orientation, ornamentation, construction systems, and a sketch of the spatial arrangement, 2). Kinship system is realized on the elements of the configuration space, the amount of spaces fit the needs of residents and community life, as well as the completeness home; customs hall, granary, and a yard wide, 3). Philosophy of life manifested in the form of the element and the completeness of the space which is where all the activities of ethnic unity in the community, both individually and socially, 4). Leadership systems form the ornamentation patterns found on buildings, such as the form of the pole, the ornaments on the roof of the porch-railing, and the size of a large house viewed vertically or horizontally, the number of steps and the pole, the pole location or position and 5). Social system formed in the selection of roofing, decorative use or ornamentation, and composition of space in traditional home. Further research will be carried out mapping the concept of traditional buildings in North Sumatra.

Managerial Implications

In first phase of research, it will make a guidance book about traditional building concepts related to ethnic-cultural values. The guidance book will be useful to ethnic-community itself, non-government organization, government, and others in planning and design a traditional building of ethnic-North Sumatera.

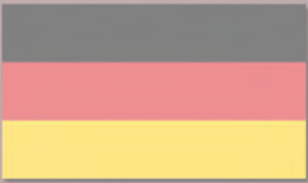
Suggestions for Future Research

In expanding the horizons of science, researchers suggested to constantly dig in gandrsearching in the field of traditional architecture in an effort to preserve the culture and architectural heritage preservation for the continuity of the nation's history. During the research process a lot of limitations that researchers encounter in accessing the data from the literature and data obtained from oral sources; heirs and humanist. For stakeholders such as government, academia, and researchers in other fields can use this study as a benchmark for subsequent studies in order to obtain better information and enrichment of ethnic cultural treasures in North Sumatra.

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It has long been recognized that international cooperation will improve the economy of a country. At present the strength of a country is not based on military power but economic power. To become a great economic state required a combination of several factors such as the strength of human resources and connectivity. Natural resources owned by a country shall encourage the country's economy in just the short time since the first two aspects of the above are the key to success because natural resources managed by incapable human resources and unreliable cooperation among countries will not boost the global economy. Human resources can be improved by education that includes researches which will only be beneficial to mankind if they are implemented and disseminated. Connectivity is the next aspect that determines economy. It can be a physical connectivity infrastructure that will expedite the flow of goods and people within the country and among countries. Another point of connectivity is the use of information technology to manage infrastructure assets that have been built and help smooth logistics. Natural resources are not the main capital for the success of the economy of a country, it will vanish without proper management. Human wisdom in managing the resources will extend the usage for next generation.

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