

SMART CITY AS A CONCEPT TO REDESIGN CITY AREA, CASE OF LHOKSEUMAWE CITY

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ABSTRACT

City is a development from village, and some city problems will show up as an impact of city development, such as congestion and crowded. Many concepts have offered to solve the city problem, like Smart City. This study is to explore smart city concept to redesign city area in Lhokseumawe City. User observation based on their activity and behavior was a method that used in this study, beside of city analysis and field observation. The design ideas were proposed based on the field problem to get better city planning. Several facility ideas and city network were to be as an alternative solution.

KEY WORDS: smart city; urban area; friendly city

INTRODUCTION

City is a development from village. Cities formed by city life changing and its city development and it is also affect to the citizen living (Schuurman, Baccarne, & De Marez, 2012). Every city has its own problems, it could be has the same or different problem. The general city issues are like population growth which is increasing housing and facility demand. Also increasing of vehicle could cause traffic congestion. A few of area in city would be crowded and cause new city problems.

As one of developing city, Lhokseumawe is a capital city of Lhokseumawe District, Aceh Province. Lhokseumawe has developed in 1980's and 1990's, when Lhokseumawe is famous as Petro Dollar City. Big oil companies are located in Lhokseumawe, gave many effects for city developing in economic sector and population growth. Years by years, national and local political and economic condition of Indonesia affected every city in Indonesia, also Lhokseumawe.

Many people migrated to Lhokseumawe or moved out from Lhokseumawe, and influence the amount of city population. The population number influences city growth. If more citizens, it also means more facility, more housing, more infrastructure, etc. City infrastructure, facility, and open space are important to give convenience for citizen. The road of city, as access and city infrastructure, is not only for public transport, but also private vehicle, and road facility, such as street lamp and pedestrian. The city space

is not only for buildings, but also open space area. People live in urban space as a container of humanity needs (Siregar, 2014).

This paper aims to investigate the city current problem and to solve using smart city concept and citizen friendly. The study focuses on what the user need and current issue of city line, facility and area. User observation, activity analysis and problem solving were methodology that applied in this study. Several parts of this paper consist of; literature review to determine and core element of smart city and city context. Second part is methodology and case study. Then, the result of observation and analysis, and the last parts are conclusion.

LITERATURE REVIEW

The city is the result of well-developed civilization, people living and as a working space (Ramlee, Omar, Yunus, & Samadi, 2015). City characterized is when transportation network accumulates significantly as an impact of dense population which change city land use is more various (Siregar, 2014). This paper adopts smart city concept as base proposed design. Smart city has applied in many cities in the world; Amsterdam, London, Tokyo, Vienna, etc. In general, smart city term is related to technology. In Europe smart city report mentioned that the smart city were identified by six main areas: smart living, smart governance, smart economy, smart environment, smart people and smart mobility (Giffinger et al., 2007). Citizen

of the smart city can lead to be more creative life through opportunities that provided by facility of smart city (Nam & Pardo, 2011). Each country has different thought about smart city concept meaning based on its point of view (Suryotrisongko, Kusuma, & Ginardi, 2017).

Although using smart city concept, this study propose to provide city area that user-friendly, user-safety, and user-healthy. Lacinák & Ristvej (2017) described that the integration of technology and natural environment, as a concept of safe city, allow the citizen to get easy access and effectiveness of healthy living and environment, also emergency disaster response.

Public open space is one of element of urban environment (Nasution & Zahrah, 2014). Urban space is not only for building area only, but also for open space. The spaces have identical and value of cultural, political, and economic life for city civilization Urban open spaces have been critical sites of cultural, political, and economic life from early civilizations to the present day (Stanley, Stark, Johnston, & Smith, 2012). The urban open space is not only the real 'open' space without building or roofed space, but also public building is including to urban space with freely accessible (Stanley et al., 2012). Hence, the facility that provided in open space should be considered for citizen convenience. Citizen should have to allowed free access to public open space (Nasution & Zahrah, 2014). The public activity were held in public open space because it considered as public accessible (Jayakody, Amarthunga, & Haigh, 2018). Public space should to keep citizen social interaction in city living (Siregar, 2014)

METHODOLOGY

This research conducted by observed in generally nine sites in Lhokseumawe, where as we defined it to three areas. One area was selected by site analysis determination. Hereafter, we observed in depth the city center area. The observation was conducted in one week, from morning to night. We observed for each site, with the following item; user, activity, facility, area potential, area weakness, problem, and user needs and behavior. Before proposed idea, we figured out outdoor space based on user and its behavior, activity, and place role. Behavior mapping, visual survey through sketch and photograph carried out to identify variety pattern and activity.

RESULTS AND DISCUSSION

Study Area

The object of this study was located in Lhokseumawe City. Firstly, this study survey nine sites (Fig. 1) in Lhokseumawe, and divided it to three area; city entrance area, city center area, and city exit area. Site number 4, 5, and 6 were selected as study object, due to as the city center area and site selection determination based on

advantage, disadvantages, user, and traffic lane.

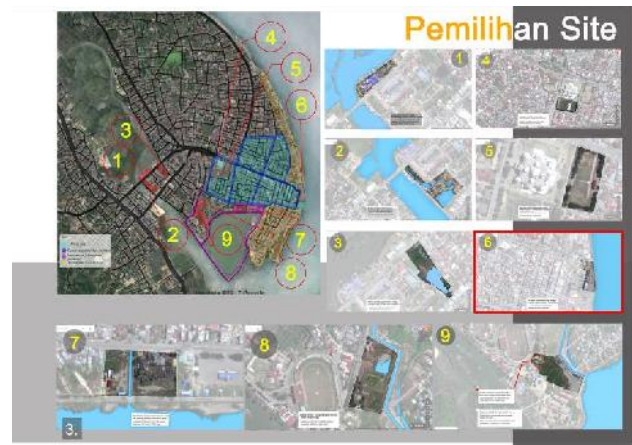


Fig. 1. Site Selection

Observation and Analysis

In city center area, each block has different land use. We found that six functions; commercial, settlements, bank, sport, office, and main road. Several activities were spreading in various places in weekdays and weekend (Fig. 2). There was a few users do the activity on weekend time. More users visited city center do for refreshing, relaxing, sport, and other fun activity. But on weekdays and office hour, all areas were crowded.

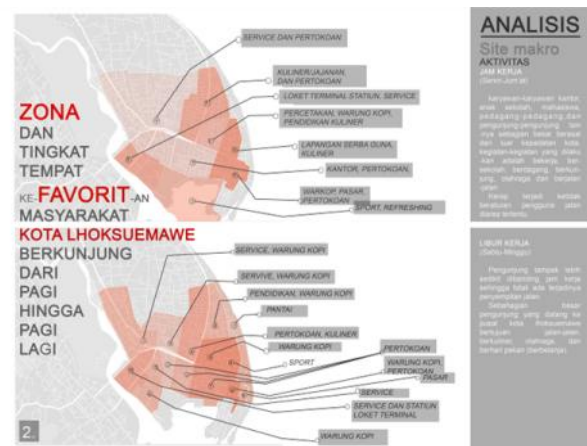


Fig. 2. Various Activities Area

We initially determined user and vehicle type on this area (Fig. 3). The users were divided based on age and activity. Vehicle type was not only private and public transportation go around in the city, but also truck. On peak hours, congestion and chaos couldn't be avoided. Peak hour is on 7.00 AM, 2.00 PM, and 5.00 PM in weekdays. It more crowded due to street vendors were park their sale place on the city road which is it took road space and created uncomfortable for user.

Afterward, we observed and found that three main

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