Analysis of visitor capacity seen from the physical carrying capacity (PCC) of Kelapa Lima Beach Tourism Based on Social Distancing During Pandemic and Normal Periods in Supporting the Kupang City Government Program as a Waterfront City

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***Abstract*—The purpose of the research was to explore the tourism potential of Kelapa Lima Beach in various tourist activities by adjusting the capacity or capacity of visitors that can be accommodated during the pandemic and normal times later. This type of research is descriptive qualitative. The research was conducted at Kelapa Lima Beach. The Subject is; visitors. Using mixed methods analysis, through research and development procedures developed by Borg and Gall (in Indah Agustina Wynarti 2018), exploration, implementation and dissemination. The targeted output is the publication of Polman's International iCast 2022 proceedings. The results of the study: a) The tourist attraction of the Kelapa Lima coast in Kupang City in supporting the city's tourism activities (seeing green open areas and spaces, sports, playing, social interaction with traditional fishing activities, cycling, family picnics, jogging tracks, public facilities, pedestrians) Coastal tourism as culinary tourism, b) physical capacity for visitors at Kelapa Lima Beach during the pandemic, 601 visitors, c) physical capacity for visitors at Kelapa Lima Beach during normal times, 933 visitors, d) Visit management model Kelapa Lima beach tourism in Kupang City during the pandemic and normal times, the policy can continue during the pandemic but with a reduced number of visitors by continuing to apply social distancing by increasing the area of visitor activity coverage (a) which in normal standards is 65 m2 (8 m) needs to be adjusted to the standard social distance distance by increasing the area for 1 or number of tourists by 42 (2 m) to 1012 (10.06 m).**

Keywords:* *Analysis, Capacit, Visitor's, Coastal Tourism, Pandemic, Normal

I. INTRODUCTION

The government's program to organize the center is part of the regional spatial plan, including the utilization therein, as stated in the 2011-2031 Kupang City spatial plan. The vision of the spatial planning of Kupang City is the realization of Kupang City as a National Activity Center in East Nusa Tenggara which is oriented towards a Coastal, Modern and Sustainable City, including one of the coastal areas[8]. Utilization of coastal areas as a means of tourism has always been part of the development planning of the Destination area. The city of Kupang has determined the Kelapa Lima coastal area to be part of the City Destinations area (City Tour) which is used as a Waterfront City. The Kupang City Government, supported by the Ministry of Public Works and Spatial Planning through the Director General of Human Settlements, the Settlement Infrastructure Center for the East Nusa Tenggara Province in 2021, will implement the plan through activities to develop coastal areas into a waterfront city as a public open space featuring infrastructure and facilities such as a plaza, pedestrians, open theaters, gazebos, pier traders, culinary restaurant buildings and parking facilities that can support tourism activities by structuring and beautifying the appearance of the area so that visitors can freely and more comfortably carry out various activities and big events to improve the community's economy around and increase the local revenue of Kupang City.

Coconut Beach is very popular with visitors. This is because of its strategic location in the center of Kupang City and hotel accommodations, beautiful beach views and new facial arrangements and visitors are happy to visit these places while maintaining Cleanliness, Health, Security, Environment.

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This shows the enthusiasm of the people of Kupang City who enjoy the beauty and facilities provided. This place can also be used as an event venue with a large number of visitors, so in the long term it is very important to consider the capacity of tourist attractions with the number of visitors adjusted to conditions if a pandemic occurs again in the future by paying attention to the comfort and safety of visitors.

Based on this, according to the researcher, for the long term if a pandemic occurs again, the efforts that can be made can be applied with a model of managing the number of visitors according to the special capacity during the pandemic so that they can anticipate various possibilities that occur from the description, the problems that can be solved are: identified are: 1) How is the tourist attraction of Kelapa Lima beach tourism in Kupang City in supporting City tourism activities? 2) What is the visitor capacity of Kelapa Lima Beach if one day a pandemic occurs again 3) What is the capacity of Kelapa Lima Beach visitors during normal times 4) What is the management model for Lima Pasir Panjang beach visit in Kupang City during the pandemic and normal times?

The purpose of this study is to explore the tourism potential of Kelapa Lima Beach in various tourism activities by adjusting the capacity or capacity of visitors who can be accommodated during the pandemic and normal times. This research method is descriptive qualitative quantitative through research and development procedures that were developed by Borg and Gall (in Indah Agustina Wynarti 2018), conducting exploration, implementation and dissemination [(11).] The targeted output is the publication of the International Icast 2022 proceedings.

II. REVIEW LITERATURE

According to Lely Sidatul Akliyah, Muhamad Zulkarnain (2013) in the journal "Analysis of the Supporting Capacity of the Sabanjar Beach Tourism Area, Alor Regency in Supporting Sustainable Tourism" the purpose of this research is to be able to optimize the tourist area, one aspect that must be seen is the carrying capacity available in the area. the area so that in the future the development of tourism can be sustainable, the results of the study show that the condition of the Sabanjar beach area has not exceeded the carrying capacity, where the carrying capacity of the Sabanjar beach tourism area is 28,931 visitors with an area of both land and water zones is 492,484m2 [(1).]

Ricky Achmad Husaini et al (2019), a study of the maximum visiting capacity of tourism spaces made by the Selecta City Recreation Park, the results of the calculation of the artificial tourism capacity in the Selecta Recreational Park, resulted in a PCC value of 1,043 visitors/day, an RCC value of 65 compared to the average number of visitors. per day reached 3,830 visits with an average visit time of 2.16 hours, the number of visits per hour was 1,773 visits. This figure has exceeded the physical capacity limit and exceeded the effective limit based on the calculation [(4).]

Yusuf Ihwanuddin (2016), analysis of the carrying capacity of the tourism area (carrying capacity) of Delegan Beach, Panceng District, Gresik Regency, the purpose of this study was to determine the characteristics of tourists and determine the carrying capacity of the Delegan Beach area. By using descriptive research methods with cifuentes processing techniques. The results obtained are the number of tourists that can be accommodated by the Delegan beach area is 266 people/ha [(5).]

Visitor Capacity Analysis

Tourism carrying capacity is the maximum number of people who are allowed to visit one tourist place at the same time without causing damage to the physical, economic and socio-cultural environment and decreasing quality that is detrimental to tourist satisfaction (Livina in Egi Sasmita Darsiharjo: 2014)[(3)]. In this case the emphasis is on controlling the number of tourist visits in a tourist area so that the tourist area is not damaged both in terms of the environment and facilities due to the large number of tourists.

According to Eagle and McColl (in Damanik and Weber 2006:59) tourism carrying capacity is the number of visitors and tourism infrastructure that can be accommodated in an area without reducing the biophysical quality and tourist attraction[(4).] According to Wolters (in Egi Sasmita Darsiharjo: 2014) tourism carrying capacity is one type of specific environmental carrying capacity and is more inclined to environmental carrying capacity (biophysical and social) which refers to tourist activities and their development[(3).] Here the emphasis on tourism carrying capacity lies in the factors of environmental change caused by tourist activities and the facilities provided by the manager. In determining the carrying capacity of tourism, it can be determined through 3 factors, namely physical carrying capacity (PCC), real carrying capacity (RCC) and effective carrying capacity (ECC) which can be tested using the method developed by Cifuentes and has been suggested by the International Union for Conservation of Nature (IUCN). Sayan and Atik, (in Egi Sasmita Darsiharjo: 2014)[(3).] Physical carrying capacity (PCC) is the maximum number of tourists who are physically fulfilled by the space provided at a certain time.

Tourist attraction

According to I Gusti Bagus Rai Utama (2016, p. 142), tourist attraction is everything in a place that has uniqueness, beauty, convenience and value in the form of a diversity of natural and man-made wealth that is interesting and has value to be visited and seen by tourists. [(2).]

Kelapa Lima Beach Coastal Area

Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia No. 14/MEN/2009 concerning Maritime Partners stipulates that the management of coastal areas and small islands is a process of planning, utilization, monitoring and control of coastal resources and small islands with several sectors [(9).]

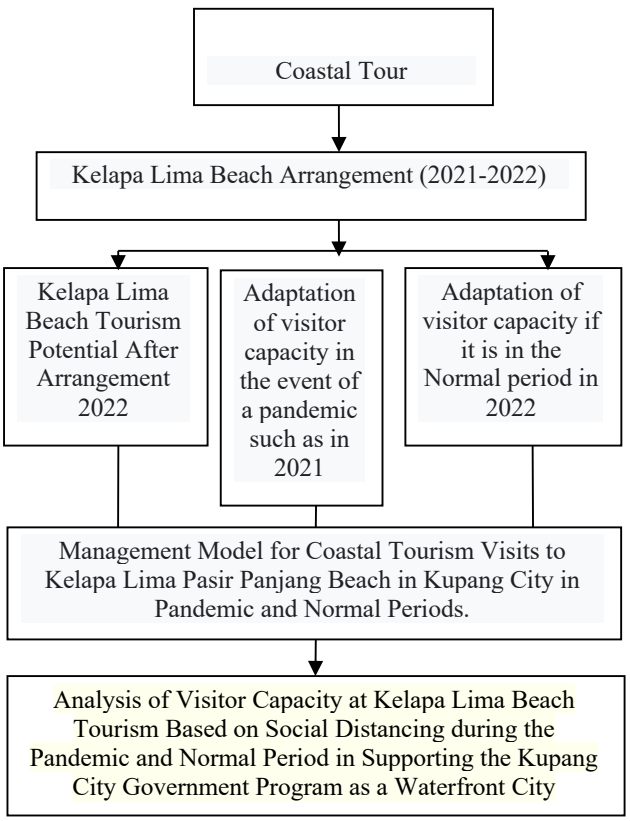
Social Distancing

Physical distancing or can be interpreted as limiting physical contact is a series of actions in non-pharmaceutical infection control that aims to stop or slow down the spread of infectious diseases. The main purpose of this restriction policy is to reduce the possibility of physical contact between infected people and other people who are not infected, so as to minimize the occurrence of disease transmission, viruses, morbidity, and other bad consequences that can result in death (Yunus & Rezki, 2020) [12]. According to WHO, the practice of maintaining a good distance of at least 1-3 meters when in public places, especially if someone is coughing or sneezing. Meanwhile, the Ministry of Health recommends maintaining a distance of 1-2 meters to reduce contact between residents (social distancing) to stop or inhibit the spread of the Covid Virus or Omicron.(padk.kemkes.go.id)[13].

Waterfront City

According to Rivai, Notanubun & Mussadun (2017), mentioning that in principle the design of a waterfront city is the basics of structuring a city or area that includes various aspects of consideration and structuring components to achieve a good city or area design [7].

Figure 1. *Road Map* of research



RESEARCH METHOD

This research is a qualitative descriptive study, in its completion using the research and development procedure developed by Borg and Gall (in, Wynarti 2018), namely, conducting exploration and implementation as well as dissemination [11]. Without reducing the validity of the process and research findings, adaptations and modifications were carried out in stages as shown in the flowchart of the research procedure below:

Research Location and Time

This research was conducted in Kupang City, especially in the new tourist spot area at Kelapa Lima Beach, Pasir Panjang, Kupang City. The research was carried out for six (6) months, starting from March – October 2022.

Research subject

The research subject is the name of the person who can provide information in the form of the actual state of the object of research, such as; visitors, traders, and photographer services

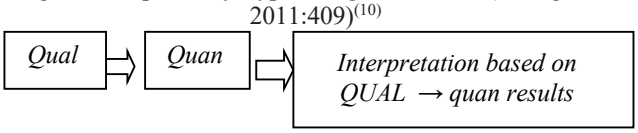
Research Instruments

To get valid data an instrument (Moleong, 2010:168)[6]. The researcher acts as a data collector and as an active instrument in an effort to collect data in the field. While other data collection are various forms of tools, carrying capacity analysis tools, questionnaires, secondary data, recording devices, stationery and other documents that can be used to support the validity of research results, but function as supporting instruments [6].

Analysis Techniques

The analysis technique in this research uses mixed methods of qualitative and quantitative (mixed methods). Cresswell (in Sugiono, 2011:409) states that sequential exploratory in the early stages of the research method uses qualitative methods and the next stage uses quantitative methods. The data mixing of the two methods is connecting between the results of the first and second studies[10].

Figure 2. Exploratory Type Design, Creswell, (In Sugiono, 2011:409)[10]



Qualitative results to explain data sourced from secondary data, interviews with traders and photographer services while quantitative data results, namely numerical data in the form of percentages obtained from visitor visit constraints, will be adjusted to the calculation analysis (PCC) used for visitor capacity analysis when pandemic and normal times. . Physical carrying capacity (PCC) is the maximum number of tourists who are physically fulfilled by the space provided at a certain time Douglas (in Ihwanuddin (2016), PCC is calculated using the formula [5]:

PCC = A x V/a x Rf

Information:

A : The area available for tourism use

V/a : Area required for certain activities (m^2) or V is a tourist and

a : is the area needed by tourists, Douglas (Ihwanuddin (2016) [5]

Rf : Rotation Factor

The basic considerations used in performing this PCC calculation are:

a. The area requirement of a tourist for swimming is 302 ft2, boating is 544 ft2, picnic is 65 m2 0.0065 ha and camping is 3640-3907 ft2 Douglas (in Ihwanuddin (2016)[5].
b. The rotation factor (Rf) is the number of daily visits allowed to one location, which is calculated by the equation:

$$Rf = \frac{\text{Opening Period}}{\text{Average time per visit}}$$

III. RESULT AND DISCUTION

Overview of Kelapa Lima Beach

Kelapa Lima Beach is located in Kelapa Lima Village, Kelapa Lima District, Kupang City, East Nusa Tenggara Province. Pantai Kelapa Lima has an area of 11,765 m2 which is used for 1 open-air theater unit, with an area of 476 m2, 4 units of merchant jetty/pier with a total area of 3,168 m2, a stepping plaza with an area of 2030 m2, and a breakwater with an area of 3,168 m2.

Based on the total and the construction of the facilities in it, the free open area that can be used for various activities by visitors is the area that is not used for infrastructure and supporting facilities, namely the total area built for infrastructure and facilities minus the total area of Kelapa Lima beach. It can be seen in the following analysis:

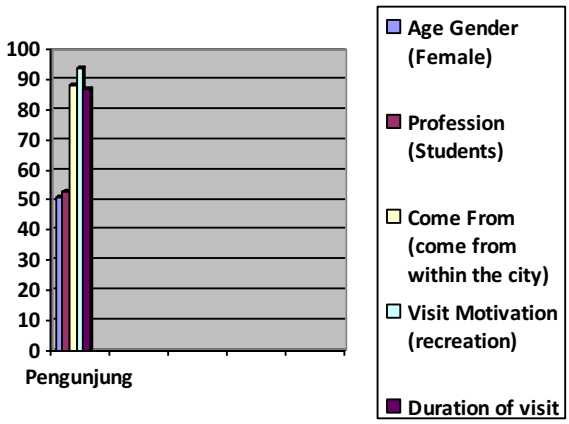
Area of open space for visitor activities = total area - area of facilities and infrastructure as well as main and supporting facilities.

11,765 m2 - 476 m2 - 3168 m2 - 2030 m2 – 1035 = 5056 m2

Characteristics of visitors

Age Gender: The number of visitors based on gender from the total respondents was dominated by women as many as 51 people. Occupation: Number of visitors based on occupation, the number of respondents is dominated by students, as many as 53 other than 32 workers and 15 people do not work. From : Most of the visitors came from within the city of Kupang as many as 88 people while from outside the city of Kupang as many as 12 people. Motivation to visit: Most visitors have motivation for recreation as many as 94 people, 6 others have other goals. Duration of visit (Hours): Most visitors spend a duration of 2 hours per visit, i.e. 87 people, 13 other people more than 2 hours the duration of one visit.

Figure 2. Characteristics of the dominant five coconut beach visitors.



Based on the results of interviews with traders, photographers, and information from secondary data from the existing literature, the results show that the Kelapa Lima beach has the following attractions:

1). Tourist Attractions found on the Coconut Lima Coastal Coast, Kupang City in Support of City Tour Activities

Based on this research, it can be said that Kelapa Lima Beach in Kupang City as a Water Front City has an attractiveness and uniqueness of natural beauty. In addition, it is supported by facilities and a very strategic location in the center of Kupang City so that it is considered capable of supporting various beach tourism and sports activities for visitors. Tourist activities that can be done by visitors are as follows:

Natural attraction:
a) Observation area,
b) Sunset and
c) Green open space,

Socio-cultural attraction:
a) Social interaction of traditional fishing activities,
b) family picnic,
c) Coastal Pedestrians as culinary tourism,

Artificial attraction:
a) Photo Spot
b) artistic public facilities,
c) Cycling Activities,
d) Jogging track
d) Sports,

2) The capacity that is able to accommodate visitors at Kelapa Lima Beach at new normal times/Physical Carrying Capacity (PCC) is the maximum number of tourists physically fulfilled by the space provided at a certain time (in Ihwanuddin: 2016) PCC is calculated using the formula [5] :

$PCC = A \times V/a \times Rf$

Information:

A : The area available for tourism use

V/a : Area required for certain activities (m^2) or (V) is a traveler and a is the coverage area required by a traveler (a) picnic is 65 m2 (0.0065

ha) is the area needed by tourists for picnic, Douglas (in Fendeli 2009:72)[3]
Rf : Rotation Factor

Is known :
A : 5056 m^2
V/a : 1/65 m^2
Rf : Rotation Factor.....?

From the results of the questionnaire distribution of 100 visitors, it was found that in general the duration of the visit at the Kelapa Lima beach was a total of 87 (87%) visitors who enjoyed activities in these places for 2 (two) hours while the other 13 (13%) people spent more than 2 (two) hours.

Kelapa Lima beach is an open space for the public so that the time of visit is not limited. So the author determines the time of visiting tourist attractions taken 24 hours

The rotation factor (Rf) is the number of daily visits allowed to one location, which is calculated by the equation:

$$Rf = \frac{\text{Opening Period}}{\text{Average time per visit}}$$

$$Rf = \frac{24 \text{ Hours}}{2 \text{ hours}}$$

$$Rf = 12 \text{ Hours}$$

$$PCC = A \times V/a \times Rf$$
$$PCC = 5056^2 \times 1/65^2 \times 12 \text{ Hours}$$
$$PCC = 933 \text{ Visitors}$$

Based on the results of the analysis obtained, the physical capacity of the five coconut beach tourist sites during the New Normal period was able to accommodate up to 933 visitors.

3) Capacity that is able to accommodate visitors at Kelapa Lima Beach in the event of a Pandemic/Physical carrying capacity (Physical Carrying Capacity/PCC) is the maximum number of tourists who are physically fulfilled by the space provided at a certain time Douglas (in Ihwanuddin: 2016) PCC is calculated using the formula [5]:

PCC = A x V/a x Rf
Information:
A : The area available for tourism use
V/a : Area required for certain activities (m^2) or (V) is a traveler and a is the coverage area required by a traveler (a) 65m^2 (0.0065 ha) is the area needed by tourists for picnic, Douglas (in Fendeli 2009:72)[3]
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$$Rf = \frac{24 \text{ Hours}}{2 \text{ hours}}$$

$$Rf = 12 \text{ Hours}$$

Adaptation Of PCC Formula And Social Distancing:

$$PCC = A \times \frac{1}{a + \text{social distance}} \times Rf$$

A = 5056 m^2
V = 1 visitor
Rf = 12 Hours

a = 69 m^2 (8,07 m) (0.0065 ha)
Social distancing = 2 m (4 $m^{2)}$ (0.0004 ha)

$$PCC = 5056 \text{ m}^2 \times \frac{1}{65 \text{ m}^{2)} + 4 \text{ m}^2 \text{ (2 m/social distance)}} \times 12$$

PCC = 5056 m^2 x 1/69 m^2 x 12 Hours
PCC = 879 Visitors

Based on the analysis obtained, it is known that the physical capacity of visitors to Kelapa Lima Beach if one day a pandemic occurs is only allowed as many as 879 visitors.

4) A Visit Management Model that can be applied for the long term on Coastal Tourism of Kelapa Lima, Kupang City if one day there is a Pandemic Period and New Normal period.

A model for managing tourist visits if one day a pandemic occurs again, the policy that can be taken is to apply a quota system for the number of visits by taking into account the physical carrying capacity, namely the maximum capacity to accommodate visitors of 879 visitors while in normal quota conditions which are considered ideal by considering power Physical support for Lima Beach is 933 visitors.

IV. CONCLUSION

Based on the results, it can be said that Kelapa Lima Beach in Kupang City as a Water Front City has an attractiveness and unique natural beauty. In addition, it is supported by facilities and a very strategic location in the center of Kupang City so that it is considered capable of supporting various beach tourism activities and sports for visitors.

Based on the analysis obtained, the physical capacity of Kelapa Lima Beach visitors during the New Normal period, namely; able to accommodate up to 933 visitors. In addition, based on the results of the analysis

obtained, it is known that the physical capacity of visitors to Kelapa Lima Beach if a pandemic occurs later while continuing to carry out activities but is able to accommodate as many as 879 visitors.

A model for managing tourist visits if one day a pandemic occurs again, the policy that can be taken is to apply a quota system for the number of visits by taking into account the physical carrying capacity, namely the maximum capacity to accommodate visitors of 879 visitors while in normal quota conditions which are considered ideal by considering power Physical support for Lima Beach is 933 visitors

In addition, it is supported by facilities and a very strategic location in the center of Kupang City so that it is considered capable of supporting various beach tourism and sports activities for visitors. Considering that Kelapa Lima Beach Tourism will start operating, the Government needs to pay attention to the management of the Kelapa Lima Beach public area for the long term, it must be managed properly by considering the capacity of visitors based on the physical carrying capacity of the beach. tourist attractions themselves, during the New Normal period or when external threats occur. like during a pandemic. This is done to minimize social impacts (reducing the number of virus transmissions, economic impact on swords and other businesses) where in a pandemic situation, tourist areas can still be opened but the number of visitors must be as needed. village, during the pandemic according to analysis, environmental impacts (damage to facilities, as well as varieties of protective plants found in tourist areas).

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