The economic marine tourism based on cleanliness health safety and environment (CHSE) protocol as covid-19 outbreak responses at Derawan Island, Indonesia

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Abstract. Popular tourism activities at Derawan Island are snorkelling and diving. The Covid-19 outbreak led these activities down and reduced visitors and income for restaurant, lodging, and diving center business units. The Ministry of Tourism and Creative Economic of Indonesia (KEMENPAREKRAFT) issued a new regulation to suppress the pandemic's adverse impact specifically designed for New Normal Tourism with CHSE. They created new trouble in business units' cash flow. It requires financial incentives and stimuli for its stability. This study assessed the tourists' WTP, evaluation using the CVM, which covered the cash flow with three schemes. The value of the WTP substituted to financial analysis and looked at the number of BEP. WTP value for each person was US$ 2.97, or about US$ 190,636.28 - 288,677.80 in a year. If the cash flow did not reach the BEP, it would have proposed the financial stimuli to be submitted to related stakeholders. The restaurant was the most business unit that needed several financial incentives. Restaurants faced difficulties to reach BEP in three schemes, and they needed around US$ 170,422.54 - 247,323.94 in a year for over 20 restaurants.

Keywords: new normal tourism; indonesia economic recovery; underwater tourism

1. Introduction
COVID-19 slammed many sectors setbacks and even bankruptcy all of the aspects of life in 2020. The tourism sector is one of the most affected, decreased around 88.82% compared to the same quarter in 2019 [1,2,3]. At the ministry level, the Socialization of Guidelines for the Implementation of Cleanliness, Health, Safety and Environmental Sustainability (CHSE) for Hotels and Restaurants held by the Directorate of Institutions – Deputy for Resources and Institutions, The Ministry of Tourism and Creative Economy (Indonesian: Kementerian Pariwisata and Ekonomi Kreatif, abbreviated as KEMENPAREKRAFT) in Medan and other big cities in Indonesia at the end of the second semester of last year. The government tried to minimize the economic impact and release some regulations last
The economic marine tourism sector on Derawan Island needs a scientific study to support a Government regulation (INPRES No.6 Tahun 2020) at the East Kalimantan with CHSE implementation. Increasing cost variables and decreasing the number of visitors will change the sustainability of their business. So, the financial analysis will be used to identify their cash flow condition. On the other hand, the new normal tourism of the Covid 19 outbreak had to modify to overcome changes in their cash flow. In this research, a scheme would be conducted by accommodated willingness to pay's (WTP) potential travelers who want to contribute to new normal tourism regulation, besides preparing several alternatives if failed.

2. Material and Methods

This research applied a survey method [8] at Derawan Island, Berau Regency, Indonesia, from October 2020 until April 2021. In recent years, the Contingent Valuation Method (CVM) was used for estimating the value that a person places on a good. CVM is the only method for measuring the economic value for people who do not experience on-site recreation [9]. The approach required people to directly report their willingness to pay (WTP) to obtain a specified good [10, 11, 12]. The tourist WTP was the value for their extra ticket fee because restaurants, hotels, and diving centers, must be implemented the CHSE protocol as KEMENPAREKRAFT regulation. First, a hypothetical market was built [12]: "respondent willingness to pay was US$ 3.52 would use to CHSE protocol for reducing the spread of the Covid-19 at Derawan Island. The tourist would pay when arrived at Derawan port". We took the bidding price for the next step [12] with the library research method and observation on the entrance ticket, so we got US$ 3.52. At the beginning of December, we did pre-trial research to run the bidding price at US$ 3.52. We managed eight corresponding visitors from different origins, and they object to the bidding value.

In some articles [9, 13, 14, 15], respondents in a laboratory market tend to state that they will pay for a good, but they will not. Accordingly, we used the Open-Ended question format for the elicitation method [12, 16]. In this format, respondents were asked the question, "what is the maximum you are willing to pay for CHSE protocol in Derawan?". So mean WTP obtained as follows [10, 11, 17, 18]:

$$MWTP = \frac{\sum_{i=0}^{n} W_i \times P_i}{n}$$  \hspace{1cm} (1)

This research did not count aggregating the data and carrying out validity checks, three steps only for basics of a CVM exercise [19]. This research got 208 respondents all over Indonesia, referred by Slovin (1960), most respondents from Java and Kalimantan Island. Random sampling was conducted to obtain the data through an online questionnaire and google form as tools [8].

A value of WTP substituted in the financial analysis was to find out the feasibility of business units (restaurant, lodging, and dive center), which connected with diving and snorkeling activities [20, 21, 22]. The depth interviews with a questionnaire were conducted to three dive centers, 20 restaurants, and 15 lodgings by stratified proportional sampling [8, 23, 24, 25]. There were four conditions to be compared, i.e., normal (before the Covid 19 outbreak in 2019), optimistic, pre-recovery, and pessimistic conditions. There were some assumptions in financial analysis: steady-state condition; interest rate in 8.8% over five years; a new normal tourism quota used at 50%, 75%, 90%, referred to visitor data at 2019 by Tourism Agency (Indonesian: Dinas Pariwisata) East Kalimantan Province; WTP substituted after June 2021; the government incentive not included; 1 US$ equal with 14,200 IDR.
Financial analysis output was looking for a break-even point (BEP) level. It was considered the margin of safety for an entity based on the revenues collected and spent costs. The decreasing number of visitors, reducing income, and additional expenses for implemented CHSE rules changed their cash flow. Thus, we assumed that when WTP was given to financial analysis would be better than before. If it were not reached to BEP, it would design a funding proposal for the local government, private sector, or other stakeholders. The value needed was determined by descriptive analysis [8].

3. Result and discussion
The drop-in visits reached 97.36% for foreign tourists and 56.55% for domestic tourists. New Normal rules for tourism activists are limited to implementation from the middle of last year until May 2021 were: provide facilities for wash hands using soap, cleaning with disinfectants, and provide hand sanitizer. A limiting number of visitors for social distancing issues cannot carry out since the number of tourists during the peak season tends to be hard to control. The table 1 estimates the financial result in 2019 for dive centers (DC), lodging, and restaurant in feasible enough, although the cost of labor in a restaurant and lodging was not calculated because their family did it by themselves.

The hypothesis assumes that a change in cash flow causes the business unit becomes unfeasible to run. The scheme for reducing these problems is that WTP value would be used to add that if the addition of WTP still does not reach BEP or is not feasible, an additional stimulus to other stakeholders would be submitted. Figure 1 represents the 208 respondents (95%) willing to pay to implement health care on Derawan Island.

The results of the CVM analysis were calculated based on the average value of the WTP of US$ 2.98/person. Financial analysis was assumed by the cash flow of restaurants, lodging and dive centers during the pandemic. Financial feasibility was carried out in three different conditions. The first condition was pessimistic, where the quota of tourists by 50% (during five years of financial analysis calculations) from normal conditions before the pandemic. The second condition was pre-recovery steps based on the Indonesian Government effort for Indonesian Travel Bubble, direct flight

| Business Unit | Indicator  | NPV (US$)   | BCR | IRR (%) |
|---------------|------------|-------------|-----|---------|
| Dive Center   |            | 2,818,306.17| 4.99| 127     |
| Restaurant    |            | 84,722.75   | 1.12| 13      |
| Lodging       |            | 4,180,250.89| 3.13| 75      |

*w* steady-state, interest rate 8.8% over five years; Source: data processing 2021

Figure 1. Willingness to pay potential visitors.
to priority destination, Work from Bali, and others. In these cases, we calculated the elevation of visitors. About 50% quota during 1st and 2nd year and it will end at the end of 2021. In the 3rd year, it will increase the quota to 75% until the 5th year. The third condition was optimistic based on the government and society's experience in dealing with the pandemic. Those were increased, so the pandemic condition was under control.

This condition used a 50% quota until the end of the 2nd year. The 3rd and 4th used 75% and 90% quota starting at the beginning of 2024.

A dive center business was hit significantly hard because the income changed drastically due to the stopped access for foreign tourists. Then, the dive center survived by relying on domestic tourists only. Unfortunately, the domestic visitors recorded a slope of 56.55% from normal conditions. It was not valued equally to the diving activities because domestic tourism mostly took snorkelling in their activities. Even though the dive center had a slump in 2020, this business could still reach more than the break-even point based on financial projections for five years. Thus, the net present value resulted in a positive value with a BC ratio of 1.64. The estimated value can be obtained by requisite: access for foreign tourists opened in the second semester of this year (with a duration of 7D6N), and the duration of stay for domestic tourists of 5D4N. In this scheme, the DC does not require WTP visitors or a stimulus from the government. The sticky part of this scheme for DC is how to carry out regulations for domestic or foreign tourists for a vacation to Derawan Island.

According to the government and field observations regulations, the pre-recovery economic scheme was carried out based on the latest conditions of new normal tourism development. Observations in early December 2020 gave information that during a long holiday in late October, the number of visitors

| Table 2. Financial feasibility of DC, restaurant, and lodging in pessimistic condition*. |
|-----------------------------------------------|----------------|-------------|------------|----------------|
| Business Unit     | Indicator | NPV (US$) | BCR | IRR (%) | INCENTIVE (US$) |
| Dive Center       |            | 326,879.89 | 1.64 | 25      | -               |
| Restaurant        |            | -843,106.02| -   | -       | -               |
| Restaurant²       |            | -703,210.92| -   | -       | 54,467.51       |
| Restaurant³       |            | 36,486.16  | 1.05 | 10      | 301,791.45      |
| Lodging           |            | -531,228.68| 0.73 | -       | -               |
| Lodging²          |            | -391,333.57| 0.80 | 1       | 54,467.51       |
| Lodging³          |            | 72,030.20  | 1.04 | 10      | 209,397.08      |

*steady-state, interest rate 8.8% over five years, without government incentive, WTP added after June 2021, 50% quota for five years.

²WTP added.

³WTP plus a nominal stimulus proposed to the government or other stakeholders.

| Table 3 Financial feasibility of DC, restaurant, and lodging in pre-recovery condition* |
|-----------------------------------------------|----------------|-------------|------------|----------------|
| Business Unit     | Indicator | NPV (US$) | BCR | IRR (%) | INCENTIVE (US$) |
| Dive Center       |            | 730,723.57 | 2.25 | 36      | -               |
| Restaurant        |            | -725,468.32| 0.07 | -       | -               |
| Restaurant²       |            | -527,128.89| 0.30 | -       | 81,701.26       |
| Restaurant³       |            | 24,695.25  | 1.03 | 10      | 266,208.30      |
| Lodging           |            | -47,418.04 | 0.98 | 8       | -               |
| Lodging²          |            | 150,921.39 | 1.08 | 11      | 81,701.26       |

*steady-state, interest rate 8.8% over 5 years, without government incentive, WTP added after June 2021, 50% quota for 1st and 2nd years, 75% quota for 3rd and 5th.

²WTP added.

³WTP plus a nominal stimulus proposed to the government or other stakeholders.
reached 2,000 people. In April 2021, the latest information received was that the number of visitors during holidays almost reached the number of visits regularly. It is decided for more quota of tourists, from 50% to 75%, however, it is only from the first semester in 2020 until the second semester of 2024. Throughout 2021, the quota uses government regulations in the middle of last year. A restaurant’s financial condition with the second scheme is still not feasible. In this second scheme, the present value received is negative throughout 2020 and 2021. Moreover, in 2022-2024, the NPV will increase positively, but the value during these 3 years cannot cover the deficit. Thus, the restaurant business will need a government stimulus. Nevertheless, in this condition, BCR lodging shall move 0.1 points that cross the BEP. It shall not need incentives from the government but a WTP of around US$ 81,701.26/year.

Optimism regarding the government's experience, social herd immunity with vaccines, and government regulations in controlling COVID-19 are the main reasons for this third scheme. Thus, it was put 90% quota for the 5th only. Then the 3rd and 4th years used the quota in 75%. It is expected to provide many government or other stakeholders interested in the tourism economy recovery. In the 5th year, the number of quotas may be increased close to the normal situation in 2019. In an optimistic scheme, it turns out that it encouraged the restaurant to be feasible, even though the restaurants do not include labor cost as a fixed variable. Restaurants reached a surplus point with a WTP stimulus of US$ 98,041.51 (for five years) and a government stimulus of US$ 170,422.54 per year. One of the reasons of income received was less than the expenditure since the health protocol asking the use of hand soap

### Table 4. Financial feasibility of DC, restaurant, and lodging in optimistic conditiona.

| Business Unit | NPV (US$) | BCR | IRR (%) | INCENTIVE (US$) |
|---------------|-----------|-----|---------|-----------------|
| Dive Center   | 755,351.08| 2.17| 34      |                 |
| Restaurant    | -703,711.72| -   | -       |                 |
| Restaurantb   | -494,654.27| -   | -       | 98,041.51       |
| Restaurantc   | 15,045.88 | 1.02| 9       | 268,464.05      |
| Lodging       | 32,992.66 | 1.02| 9       |                 |

*a*steady-state, interest rate 8.8% over 5 years, without government incentive, WTP added after June 2021, 50% quota for 1st and 2nd years, 75% quota for 3rd and 4th, and 90% for 5th year.

*b*WTP added.

*c* WTP plus a nominal stimulus proposed to the government or other stakeholders.

### Table 5. Financial needs of DC, restaurant, and lodging for implemented CHSE regulationa.

| Business Unit | Incentive needs (per year in US$) | Justification |
|---------------|-----------------------------------|---------------|
| Restaurant    | 247,323.94                        | The stimuli will propose when a quota of 50% throughout the year until the end of 2024. The stimuli will propose when the quota of 50% throughout 2021, and increases to 75% at the beginning of 2022 until 2024. The stimuli will propose when the quota of 50% throughout 2021, and increase to 75% at the beginning of 2022 until 2023. Also, it will be increased throughout 2024 by 90%. |
|               | 184,507.04                        |               |
|               | 170,422.54                        |               |
| Lodging       | 154,929.58                        | The stimuli will propose when a quota of 50% throughout the year until the end of 2024. |

*a*The normal (100% quota) basic data used by visitor data in 2019 from the Government tourism office (Indonesian: Dinas Pariwisata) of East Kalimantan Province. Incentive needs to Government, WTP not included. Source: Data processing 2021.
for hand wash, dishwashing soap for cooking utensils, also table cleaner liquid which increase up to US$ 9,160.94/a year. Unfortunately, this value cannot be omitted or reduced because it is part of CHSE.

Table 5 was the incentive summary that needs to be proposed to the government or other stakeholders. Then, the restaurant and lodging business unit’s sustainability can survive during the pandemic by implementing health protocols. The stimuli proposed to meet the mandatory requirements for implementing the CHSE protocol, encourage financially viable business units to minimize bankrupt business units, suppress the addition of unemployed workers, and stimulate the economic cycle of local communities.

4. Conclusion
Dive centers, lodging, and restaurants need a stimulus, either funding or a regulatory framework that ensures a pandemic controlled level and people being confident to engage in natural tourism activities. The implementation of CHSE is the most important to depress the spread of the pandemic. A unit business that wants its tourism activities visited must obey and comply with regulations. The implementation of CHSE caused an increase in variable costs in business units around US$ 7,214.60 to US$ 14,426.63 a year. A stimulus from WTP’s potential visitors is not enough to meet the needs of the business unit. Although, the lowest value of total WTP was US$ 27,233.75, and the highest was US$ 98,041.51 a year. The incentive would be a summit to other stakeholders or local governments around US$ 154,929.58 to US$ 247,323.94 a year, and it was a high number. Thus, further research is needed to address this issue.

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