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ONLINE REVIEW ANALYSIS ON RECREATIONAL DIVERS' EXPERIENCE ON PADI-CERTIFIED DIVE CENTER IN NUSA PENIDA, BALI

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ABSTRACT

Recreational diving is a growing sector of the tourism industry that offers unique underwater experiences to numerous people worldwide. PADI or also known as The Professional Association of Diving Instructors (PADI) has had a substantial impact on the worldwide diving sector. Nusa Penida, a well-known diving location located off the coast of Bali, Indonesia, houses numerous dive centers including PADI-certified Dive Center that provide outstanding diving amenities for divers from across the globe. The growth of the diving industry, driven by an increasing number of certified divers and a rising demand for recreational activities, highlights the need of providing exceptional diving experiences to visitors. There are 750 online reviews analyzed derived from Google Reviews of three dive resorts with star-ratings 4.9-5.0 located in Nusa Penida in Bali Province, namely, Purple Dive Penida, Legend Dive Lembongan, and Legend Dive Penida. To collect 750 reviews from Google reviews using an API tool to scrape social media data, namely Out scrapper. We conduct frequency and CONCOR analysis using occurrence network result and co-occurrence rating result using KH-Coder, a software word frequency and co-occurrence network analysis. Lastly, we assess the data using SPSS 15 to perform quantitative data analysis to obtain the exploratory factor analysis and regression analysis. The results of this research we identify key-themes surrounding the topic namely: rich underwater marine biodiversity; staff hospitality; dive certification program; diving spot; credibility and safety. Diving tourism is a delicate industry because its reliance on the timely weather conditions and underwater sights, which greatly impact overall consumer satisfaction, despite receiving positive comments. Thus, the researchers also suggest the importance of sustainability in operating and managing the scuba diving business.

KEYWORDS:- Recreational divers, dive center, marine tourism, dive tourism.

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1. INTRODUCTION

Recreational diving is an expanding segment of the tourist business that provides distinctive underwater experiences to many enthusiasts throughout the globe. Nevertheless, this expansion presents both prospects and difficulties, specifically regarding ecological consequences, measures for administration, and the long-term viability of diving tourism. Engaging in recreational diving can result in substantial harm to coral reefs due to direct contact, which can cause breakage, fragmentation, and illness in coral species, particularly those that are at a high risk of extinction (De et al., 2020; Giglio et al., 2020; So et al., 2023; Sumanapala et al., 2022). Novice divers frequently inadvertently inflict damage upon coral ecosystems, underscoring the necessity for enhanced training and awareness initiatives (So et al., 2023). According to (Giglio et al., 2020), recreational diving, a growing sector of ecotourism, can have significant negative effects on benthic creatures if not properly regulated. These consequences are a cause for concern in well-liked diving locations such as Nusa Penida.

Nusa Penida, situated along the south-eastern shoreline of Bali, Indonesia, is celebrated for its exuberant aquatic ecosystem and transparent seas, rendering it a favoured spot for avid divers. Dive centers in Nusa Penida provide a variety of diving opportunities, ranging from places suitable for beginners to more demanding drift dives. Nusa Penida, a well-known diving location located off the coast of Bali, Indonesia, is host to numerous dive centers that provide top-notch diving amenities for international divers. However, study conducted by (Gerungan & Chia, 2020) with title “Scuba Diving Operators’ Perspective Of Scuba Diving Tourism Business In Nusa Penida, Indonesia” found that Nusa Penida is indeed a prominent diving destination, encounters various obstacles including environmental concerns, inadequate workforce training, insufficient regulatory measures, lack of governmental assistance, unhealthy competition, and unscrupulous operators. It is imperative to tackle these concerns to achieve sustainable tourism development.

PADI or also known as The Professional Association of Diving Instructors (PADI) has had a substantial impact on the worldwide diving sector, having granted more than 27 million diver certifications since 1967. PADI offers different diving certification for various levels from beginner or for those who just started their diving journey may enrol “Open Water Diver” program; divers may enrol “Advance Open Water Diver”; and PADI professionals (Divemasters and Instructors) may enrol “Enriched Air Diver”. PADI certificates are widely recognised and trusted, serving as a standard for quality and professionalism in the diving community. PADI offers dive centers and resorts for divers to receive diving education, scuba diving equipment, and diving opportunities. There are various levels in dive centers and resorts which are PADI Five Star Dive Center, PADI Five Star Dive Resort, PADI Dive Star Instructor Development Center (IDC), PADI Five Star Instructor Development Dive Resort (IDC Dive Resort), PADI Star Career Development Center (CDC), PADI Dive Center, PADI Dive Resort, PADI Dive Boat, PADI Recreational Facility, PADI TECREC Center, PADI Eco Center, PADI Adaptive Service Facility, and PADI Swim School. In this research, researchers chose the PADI Dive Center certified as ‘Five star’ as our analysis units. PADI Five Stars Dive Centers offers dive shops with full range of scuba diving education programs, various underwater experience, and environmental awareness. The existence of PADI-certified dive centers in Nusa Penida demonstrates a dedication to maintaining industry norms and delivering outstanding diving opportunities to tourists.

The expansion of the diving sector, propelled by the growing population of qualified divers and the surging desire for leisure pursuits, emphasizes the need of delivering top-notch diving experiences to visitors (Zhang et al., 2023). Indonesia's diving sector has been undergoing significant expansion, with a yearly rise of 14% in the number of new PADI divers being certified (Wibowo et al., 2023). PADI-certified dive facilities have a crucial role in advancing marine conservation and increasing environmental consciousness among tourists, hence supporting the sustainable growth of diving tourism destinations (Oliveira et al., 2018). The increase in numbers highlights the widespread appeal of diving as a leisure pursuit and emphasises the necessity of accredited dive centers to meet the growing desire for diving opportunities. PADI certificates not only guarantee the proficiency of instructors, but also enhance the overall safety and pleasure of divers who are experiencing the captivating underwater marvels of Nusa Penida. The recreational diving sector in Indonesia is a flourishing industry with significant prospects. However, it has challenges related to sustainability and ecological impact that require such attention if not, it may bring fatality towards the business or even humanity to due its marine ecosystem being destroyed.

Further investigation is needed to address the research gap concerning the recreational divers experience at dive centers, as it is a crucial field of study. The satisfaction and experience of recreational divers play a crucial role in determining the success of dive centers, especially those that are certified by the Professional Association of Diving Instructors (PADI). Comprehending the inclinations and anticipations of recreational divers participating in scuba diving endeavours is crucial for dive centers to customise their offerings efficiently. Although previous research has explored several facets of scuba diving tourism, there is a requirement to particularly examine the dive center experience to improve the general comprehension of this specialised sector within the wider diving tourism market. Research conducted by (Zhang et al., 2023) highlights the significance of customising dive center services to cater to the varied tastes of visitors. Dive centers can improve customer happiness and loyalty by tailoring their services to the preferences of various demographic groups and experienced divers. Moreover, the long-term success of dive centers heavily relies on the sustainability of scuba diving tourism, as examined by (Cavallini et al., 2023). Dive centers can assure the preservation of marine habitats for future generations of recreational divers by studying visitors' preferences, motives, and attitude towards conservation, and then adjusting their practices to accord with sustainable principles.

To fill the research gaps on the recreational divers' experience at dive centers, researchers aim to further investigate by doing research on online reviews of PADI-certified dive centers in Nusa Penida, top diving destination in Bali. Researchers carefully chose three PADI-certified dive centers which are Purple Dive Penida, Legend Dive Lembongan, and Legend Diving Penida as case studies. By doing additional research, dive centers operators may understand more about their recreational divers' concerns or praises and able to improve the overall experience for recreational divers and promote the sustainable growth of the diving tourism business. PADI-certified dive centers can establish enduring impressions on tourists, cultivate loyalty, and enhance the overall performance of diving tourism locations by placing emphasis on tourist satisfaction and providing distinctive and captivating diving experiences.

2. LITERATURE REVIEW

Scuba Diving Tourism

Scuba diving tourism is a vibrant and commercially important business within the field of marine tourism. Scuba diving tourism is a diverse activity that encompasses aspects of sports, leisure, marine tourism, cultural tourism, natural tourism, and eco-tourism (Yusoh et al., 2023). Marine tourism relies heavily on it as a crucial element, attracting a large number of individuals to discover the undersea realm (Lucrezi et al., 2017; Schuhbauer et al., 2023). Scuba diving tourism has a significant economic impact, as millions of tourists from across the world contribute to the support of thousands of employments. This highlights its potential for both local and global economic growth and sustainability. Sustainability is an essential component of scuba diving tourism, and experts emphasise the importance of restructuring the tourism sector based on sustainable development principles (Cavallini et al., 2023; Lucrezi et al., 2017). The sector encounters difficulties in guaranteeing sustainability as a result of its specialised concentration on underwater ecosystems and species (Lucrezi et al., 2017). With the expansion of the sector, it is imperative to tackle safety concerns in order to mitigate hazards and enhance market accessibility (Augustine et al., 2016; Kovacs, 2023). Moreover, the evolving traits of divers and their incentives have consequences for the preservation of coral reefs and marine ecosystems (Lucrezi et al., 2017; Ms et al., 2021).

Recreational Divers

Recreational diving is a widely practiced leisure activity that makes a substantial contribution to marine tourism on a global scale. Comprehending the tastes and experiences of divers is essential for effectively managing sustainable tourism (Pantaleona et al., 2020). Studies have demonstrated that recreational diving can exert both beneficial and detrimental effects on marine ecosystems, underscoring the significance of implementing efficient conservation measures (Abidin & Bahaj, 2014).

The demand for recreational diving is shaped by an intricate interaction of diver attributes, inclinations, motives, as well as the environmental and economic effects of diving activities. Diver attributes, such as sociodemographic parameters and diving experience, significantly influence choices for diving locations. This statement is supported by the research conducted by (Lucrezi et al., 2019) indicates that there are distinct differences in the perceptions of expert divers and novice divers. This highlights the significance of customizing dive sites according to the divers' level of experience and their input (Lucrezi et al., 2019). An investigation carried out by (Zhang et al., 2023) with research title "The Influence of Sociodemographic Characteristics and the Experience of Recreational Divers on the Preference for Diving Sites" conducted in Hong Kong unveiled that the monthly remuneration of divers had a substantial impact on their physical and biological preferences for diving locations. Furthermore, the level of diving experience was a strong indicator of biological preferences, although there was no correlation observed between experience and physical preferences (Zhang et al., 2023). Research conducted by (Dai et al., 2024) with research title "Recreational Scuba Diving As A Special Form Of Tourism: Lessons From Taiwan" conducted in Taiwan has revealed that divers' dedication and way of life are impacted by their strong affinity for diving, which is linked to feelings of happiness, tranquilly, and the opportunity to bond via shared experiences (Dai et al., 2024).

Engaging in recreational diving can result in significant ecological harm, especially to coral reefs. The physical interaction between divers and corals frequently leads to the breakage, fragmentation, and disease of numerous coral species, including those that are classified as endangered or vulnerable by the International Union for Conservation of Nature (IUCN)(Sumanapala et al., 2022). IUCN has emerged as the preeminent international body responsible for assessing the condition of the natural world and determining the necessary actions to protect it. The topic of sustainability is a prominent focus in study on recreational diving. Studies are investigating the difficulty of effectively managing the demand for tourism while also prioritising conservation activities (Cavallini et al., 2023; Hodeck et al., 2021). Scuba diving tourism has the capacity to advance sustainable practices, finance conservation initiatives, and protect marine habitats(Nababan, 2023). Comprehending the significance of sustainability in diving tourism is essential for formulating efficient management methods and guaranteeing the enduring vitality of marine habitats(Hodeck et al., 2021).

PADI-Certified Dive Centers

PADI, a renowned certification body for divers, has granted more than 27 million diver certifications since 1967, highlighting its substantial impact on the worldwide diving sector (Albayrak et al., 2019). Dive centers play a crucial role in maintaining safety in recreational scuba diving activities by focusing on improving divers' education and introducing innovative risk management initiatives (Lucrezi et al., 2018). The diving business, bolstered by entities such as PADI, covers makers of diving equipment, certifying authorities, and dive shops, constituting the fundamental framework that upholds diving endeavours (Tunestad, 2023).

Certified divers, who are usually trained by reputable certifying agencies such as PADI, possess advanced skills that guarantee proficiency and safety in diving procedures (Kovacs, 2023). PADI demonstrates a worldwide dedication to the well-being of the ocean with its objective of cultivating one billion individuals who will both investigate and safeguard the ocean. Studies on mortality rates during supervised scuba diving excursions emphasize the significance of adequate supervision and strict compliance with safety rules to avoid accidents and deaths among divers (Buzzacott et al., 2021). Moreover, the value orientations of tourists visiting marine protected areas highlight the importance of resolving conflicts and ensuring a favorable experience for visitors participating in diving activities (Phillips et al., 2019). Since, Recreational scuba diving or recreational diving operations require a crucial emphasis on safety awareness and the cultivation of positive safety attitudes. While both divers and dive centers prioritise safety, divers frequently overlook the necessity of developing personal emergency plans (Lucrezi et al., 2018). Thus, PADI plays a big role in delivering safety diving experience.

PADI provides an extensive selection of scuba and free diving courses that enable novices to explore the underwater realm. Advanced speciality courses aim to develop expertise and enrich the passion of experienced divers for the seas and aquatic habitats. PADI provides diver training at various skill levels, starting with the introductory Open Water Diver course (including the Bubble maker program for children aged 8 and upwards) to more difficult courses such as Digital Underwater Imaging and wreck diving.

The business operations of PADI Members are autonomous and not owned, managed, or regulated by PADI Worldwide or PADI Offices. PADI Dive Centers, Resorts, and individual professional members are obligated to adhere to established criteria for PADI diver-training programs. Thus, there are various levels in dive centers and resorts which could be chosen to manage and develop by the owners, such as PADI Five Star Dive Center, PADI Five Star Dive Resort, PADI Dive Star Instructor Development Center (IDC), PADI Five Star Instructor Development Dive Resort (IDC Dive Resort), PADI Star Career Development Center (CDC), PADI Dive Center, PADI Dive Resort, PADI Dive Boat, PADI Recreational Facility, PADI TECREC Center, PADI Eco Center, PADI Adaptive Service Facility, and PADI Swim School.

According to (Nevin, 2019) on its article titled “The Different PADI Dive Centers: Regular, 5-Star & More” mentioned that contrary to popular belief, PADI does not possess a conventional rating system as commonly understood. PADI offers both 5-star rated facilities and unrated facilities. There are no facilities rated with 1, 2, 3, or 4 stars. The 5-Star PADI rating is not a literal rating, but rather a recognition given to Dive Centers that have fulfilled specific criteria. However, they are also accountable for the daily management of PADI programs and the oversight of divers, both personally and through their staff. According to (PADI, 2024a) states that the 5-Star PADI Dive Center membership level is given to PADI Dive Centers that demonstrate exceptional performance in offering a comprehensive choice of diver education programs, equipment options, and chances for diving experiences. Official website of Scuba.com (Nevin, 2019) elaborated more on the differences between regular Dive Centers and 5-Star PADI Dive Centers which are 1) individuals must have maintained their membership with PADI Dive Center for a minimum of 12 months and have not been found guilty of any verifiable PADI Quality Assurance breaches during that time. Additionally, they should not have any ongoing Quality Assurance enquiries; 2) Ensure that all PADI Dive Center qualifications and membership requirements are consistently met; 3) Have received all three Dive Center Recognition Awards, which include Education, Community Involvement, and Environment; 4) Disseminate regular communication materials specifically created to attract and maintain clients; 5) Complete a minimum of one PADI Advanced Open Water course, one PADI Rescue Dive course, one PADI Dive Master or Assistant Instructor course and one PADI Speciality Diver course annually; 6) We have granted a minimum of 30 percent of all diver certificates for courses that are beyond the PADI Open Water level; 7) Showcase merchandise that promotes diving trips and immersive underwater adventures; 8) Focus is solely on issuing and promoting PADI certifications for recreational scuba diving courses; 9) Have not organised, funded, or promoted any non-PADI recreational scuba teacher training programs.

3. RESEARCH METHODOLOGY

Online reviews are becoming more widely acknowledged as a significant tool for examining many facets of tourism. Academics have progressively recognised the significance of internet evaluations in comprehending tourists' preferences and degrees of satisfaction in several industries, including hotels, airlines, restaurants, and attractions (Kim et al., 2021). Online reviews have been recognised as a crucial determinant for sustainable business management in the tourism industry, influencing consumer behaviour significantly (Reyes-Menendez et al., 2020). The online evaluations have brought a new dimension to tourism, offering useful insights for businesses and consumers, and enhancing their legitimacy and importance (Kurniati et al., 2023). In this research we selected three

dive resorts' online reviews located in Nusa Penida in Bali Province namely Purple Dive Penida, Legend Dive Lembongan, and Legend Dive Penida with 250 reviews per dive resorts' with star ratings 4.9-5.0 with further details mentioned on Table 1.

Table 1 Selected Dive Resorts' Reviews Frequency and Ratings

No	Dive Resorts	Location	Total Reviews on Google Reviews	Total Reviews (Data Scraped)	Star-rating
1	Purple Dive Penida	Jalan Raya, Ped, Nusa Penida, Kabupaten Klungkung, Bali 80771	753	250	5.0
2	Legend Dive Lembongan	Nusa Lembongan, Jungutbatu, Nusa Penida, Klungkung Regency, Bali 80771	815	250	4.9
3	Legend Diving Penida	Jl. Raya Toya Pakeh - Ped, Ped, Kec. Nusa Penida, Kabupaten Klungkung, Bali 80771	517	250	5.0
Total : 750 review					

Source: Processed by researchers

Researchers extracted the data from Google reviews using data scraping tools from June 1st, 2021, 00:00 to July 19th, 2024, 14:49:01. The timeline extracted from June 2021 because, in 2021, the Indonesian government began to issue social restrictions and health protocols so that the Indonesian tourism industry was slowly recovering business operations. Researchers collected the data from June 31st, 2023, to July 19th, 2024, as shown in Table 2, with a total of 750 online reviews analyzed. The details of the earliest and latest date and time of each location are shown in table 2 below:

Table 2 Earliest and Latest Date and Time

Case Study	Earliest date & time	Latest date & time
Purple Dive Nusa Penida	July 31 th , 2023 05:13:44	July 19 th , 2024 05:50:14
Legend Diving Penida	February 12 th , 2023 08:57:22	July 18 th , 2024 05:48:41
Legend Diving Lembongan	December 12 th , 2023 08:17:18	July 19 th , 2024 04:05:44

Source : Processed by researchers

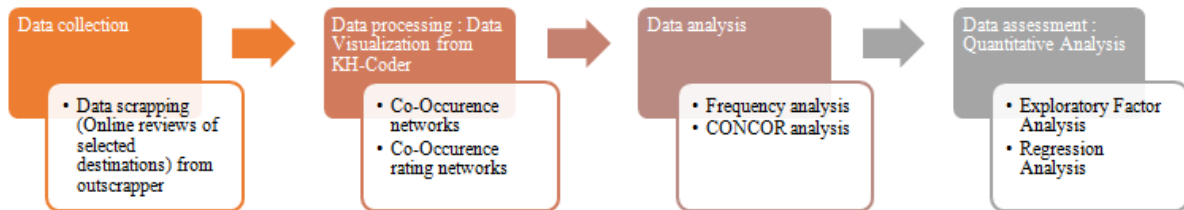
As shown in Figure 1, the first step of this study was to collect reviews from Google reviews using an API tool to scrape social media data, namely Out scrapper (Budiharseno & Kim, 2023; Noerhartati et al., 2023; Park et al., 2022). According to Table 1, there are 753 reviews from the Purple Dive Penida's Google reviews page, 851 reviews from the Legend Dive Lembongan's Google reviews page, and 517 reviews from the Legend Diving Penida's Google reviews page. After researchers input the earliest and latest date and time and excluded Google reviews without text, approximately 750 reviews were found.

After we obtained the raw data of Google reviews from Out scrapper, we proceeded to the data cleaning phase. We only input review text and review ratings. We translated 200 reviews in foreign languages, as shown in Table 4 and Figure 4. We removed the comments that did not contain relevant information. We proceed to analyze the data using KH-Coder, a tool for quantitative text-mining programs (Higuchi, 2016). The KH Coder enables users to construct a network comprising words that exhibit similar appearance patterns, meaning words that are prone to co-occur within the same content (Budiharseno & Kim, 2023; Higuchi, 2016; Noerhartati et al., 2023). Then, we decided to organize the data by adding a filter command in Excel. Thus, we can map out some information from the Google reviews, such as yearly distribution, languages used, and star rating distribution, which is shown in Table 3, Table 4, and Table 5, along with the data visualization shown in Figure 3, figure 4, and figure 5.

As shown in Figure 2, the second step of the study was to do data visualization using KH-Coder. We process 750 reviews using the co-occurrence network analysis shown in Picture 1. Then, we apply the rating review to develop the co-occurrence network based on the rating shown in Picture 2. According to (Noerhartati et al., 2023), the co-occurrence network analysis was constructed better to understand the relationship between the words and the reviews. We found the patterns and themes of recreational divers' experience in most discussed reviews, including how each word relates to one another in the context of recreational divers' experience at the dive center. The words are analyzed for frequency and organized into a matrix for semantic network analysis. KH Coder is then utilized to examine the network centrality and conduct CONCOR analysis. The outcome is presented to showcase the most frequently occurring terms (Budiharseno & Kim, 2023). The CONCOR analysis is a technique used to categorize terms into clusters, providing insights into customer experience (Ban & Kim, 2019).

As shown in Figure 1, the last step is to conduct a data assessment. We used SPSS 15 (SPSS, 2006), an all-encompassing framework for examining and interpreting data. SPSS is capable of extracting data from many file formats and utilizing them to produce organized reports and visual representations such as charts and plots to illustrate distributions and trends, as well as providing descriptive statistics and conducting intricate statistical analysis. We identified exploratory analysis (EFA) and regression linear analysis. It allowed us to see whether some terms or themes occurred more frequently in reviews with better or lower ratings.

Figure 1 Research Flow



Source : (Budiharseno & Kim, 2023; Noerhartati et al., 2023; Park et al., 2022)

4. RESULTS & DISCUSSIONS

4.1 Results

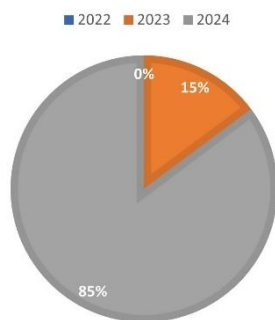
Table 3 presents the yearly distribution of online reviews. Purple Dive Nusa Penida, Legend Diving Penida, and Legend Diving Lembongan started to receive customers in 2023, with 15% of customers coming to the dive centers; with the highest number of customers in 2023 is Purple Dive Nusa Penida, while Legend Diving Penida is the second highest with 20 customers. Meanwhile, legend diving lembongan had the least with 2. In 2024, with 85%, with Legend Diving Lembongan with 248 customers, Legend Diving Penida is second highest with 230 customers, and Purple Dive Nusa Penida has the lowest with 161 customers. For better visualization, researchers made the pie chart of yearly distribution in Figure 3.

Table 3 Online Reviews' Yearly Distribution

Year	Purple Dive Nusa Penida	Legend Diving Penida	Legend Diving Lembongan	Total	Percentage (%)
2022	-	-	-	-	0%
2023	89	20	2	111	15%
2024	161	230	248	639	85%
Total	250	250	250	750	100%

Source : Processed by Researchers

Figure 2 Pie Chart of Online Reviews' Yearly Distribution



Source : Processed by Researchers

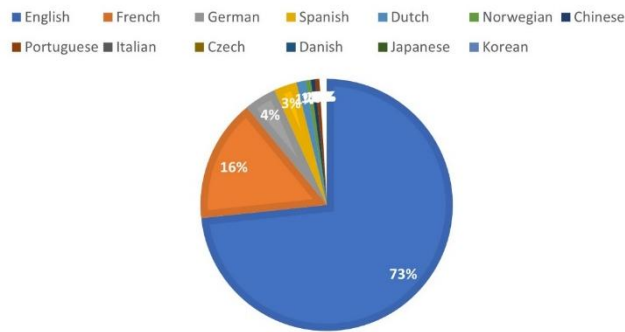
Table 4 presents the foreign language used (besides English) in Figure 4. With the details shown in Table 4, researchers could map out that the highest language is English with a total of 550 reviewers; besides English is French, with a total of 118 reviewers; the third highest is German, with a total of 31 reviewers. In spite of the fact that three selected dive centers are in Nusa Penida, Bali Province in Indonesia; we can assume that there is no native language (Bahasa Indonesia) being used as a foreign language in the review comment section.

Table 4 Online Reviews' Languages Used Distribution

No	Language	Purple Dive Nusa Penida	Legend Diving Penida	Legend Diving Lembongan	Total	Percentage
1	English	165	164	221	550	73%
2	French	66	45	7	118	16%
3	German	6	16	9	31	4%
4	Spanish	3	11	8	22	3%
5	Dutch	5	3	1	9	1%
6	Norwegian	1	4	-	5	1%
7	Chinese	-	1	3	4	1%
8	Portuguese	-	4	-	4	1%
9	Italian	2	-	-	2	0%
10	Czech	1	1	-	2	0%
11	Danish	1	-	-	1	0%
12	Japanese	-	1	-	1	0%
13	Korean	-	-	1	1	0%
Total		250	250	250	750	100%

Source : Processed by Researchers

Figure 3 Pie Chart of Online Reviews' Languages Used Distribution



Source : Processed by Researchers

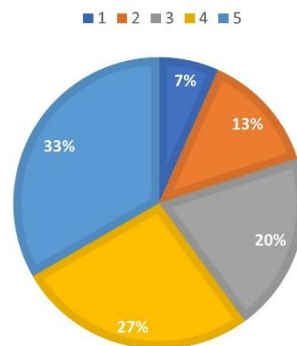
Table 5 explains star ratings on a scale of 1 to 5 in selected dive centers. A scale of 1 to 5 shows from very dissatisfied to dissatisfied, neutral to satisfied, and very satisfied. Table 5 shows that customers only input star rating scales 1, 3, and 5, with 99% of the ratings coming from 5 stars, which means customers are very satisfied with the experience at Dive Centers.

Table 5 Online Reviews' Star Ratings Distributions

No	Star Ratings	Purple Dive Nusa Penida	Legend Diving Penida	Legend Diving Lembongan	Total	Percentage
1	1	1	-	-	1	1%
2	2	-	-	-	0	0%
3	3	1	1	3	5	1%
4	4	1	1	1	3	0%
5	5	247	248	246	741	99%
Total		250	250	250	750	100%

Source : Processed by Researchers

Figure 4 Pie Chart of Online Reviews' Star Ratings Distributions



Source : Processed by Researchers

Table 6 shows the top keywords in the research; originally, there were 2643 frequent terms shown in word configuration from KH-coder analysis. However, researchers decided to select the top 100

frequent terms. The most mentioned term is "dive," with a 1067 total frequency; the second most mentioned term is the term "diving," with 788; and the third most mentioned term is the term "experience," with 394. All terms align with the research topic, recreational divers' experience in dive centers. Word frequency data from internet evaluations offer a means to identify prevalent terms and feelings (Noerhartati et al., 2023). This study aims to find out the relevant keywords the recreational divers' experience in diving centers in Nusa Penida, a top diving destination in Bali Province; the frequency of these terms offers crucial clues into the primary subject of the investigation (Noerhartati et al., 2023; Zhong et al., 2018).

Table 6 Frequency of Top Keywords

No	Keywords	Total Frequency	No	Keywords	Total Frequency
1	dive	1067	51	scuba	57
2	diving	788	52	big	56
3	experience	394	53	knowledgeable	56
4	instructor	343	54	able	53
5	time	261	55	wonderful	52
6	manta	251	56	lunch	51
7	amazing	229	57	sure	51
8	water	226	58	awesome	50
9	day	217	59	top	50
10	course	186	60	safety	48
11	open	185	61	master	46
12	team	177	62	training	46
13	professional	174	63	certification	45
14	fun	162	64	underwater	42
15	first	149	65	such	40
16	friendly	147	66	attentive	39
17	staff	142	67	people	39
18	safe	138	68	start	39
19	super	132	69	trip	39
20	everything	128	70	club	38
21	equipment	127	71	sea	38
22	center	123	72	next	37
23	best	120	73	refresher	37
24	boat	116	74	year	37
25	guide	112	75	condition	36
26	ray	110	76	service	36
27	point	102	77	calm	35
28	pool	90	78	atmosphere	34
29	diver	89	79	center	34
30	incredible	83	80	reef	34
31	beautiful	81	81	special	34

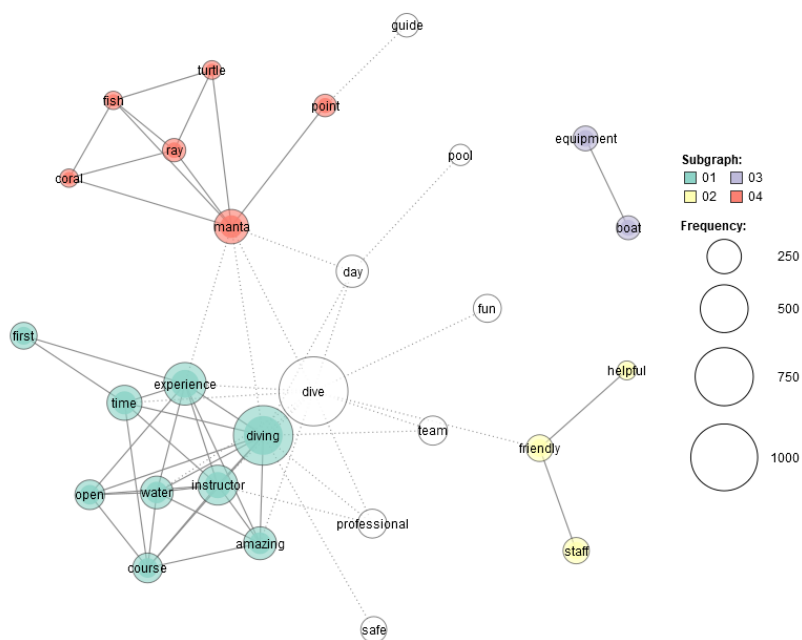
32	shop	73	82	kind	33
33	care	71	83	group	32
34	helpful	70	84	teacher	32
35	fantastic	69	85	guy	31
36	whole	69	86	skill	31
37	life	68	87	entire	30
38	place	68	88	friend	30
39	turtle	68	89	anyone	29
40	patient	67	90	ocean	29
41	spot	67	91	clean	28
42	coral	65	92	happy	28
43	fish	65	93	lovely	28
44	comfortable	64	94	quality	27
45	site	64	95	question	27
46	school	62	96	clear	26
47	everyone	61	97	confident	26
48	crew	60	98	easy	26
49	excellent	58	99	instruction	26
50	perfect	57	100	island	26

Source : Processed by Researchers

According to picture 1, the results of the co-occurrence network, we found four subgraphs connecting each term that builds a keyword group or cluster with a circle of different sizes that represents each total frequency, as explained in Table 6. Four clusters in co-occurrence network results, namely :

1. Cluster 1, depicted in light blue, is a significant cluster consisting of 9 connected terms: diving, experience, instructor, amazing, time, water, amazing, course, open, and first. This cluster underscores the pivotal role of the instructor in the open water course, which significantly contributes to the amazing first-time diving experience of divers.
2. Cluster 2, represented in yellow, is a cluster of three connected terms: friendly, staff, and helpful. This cluster highlights the crucial role of the staff's hospitality in dive centers, significantly enhancing recreational divers' overall experience.
3. Cluster 3, in lavender color, consists of 2 connected terms: equipment and boat. Cluster 3 explains the supporting facilities of dive centers that play a big role in recreational divers' experience.
4. Cluster 4 in red, consists of six connected terms: manta, ray, point, fish, and turtle. Cluster 4 explains that the abundant underwater creatures in diving points, which are manta ray, fish, and turtle, play big roles in recreational divers' experiences.

Picture 1 Co-occurrence Network Results

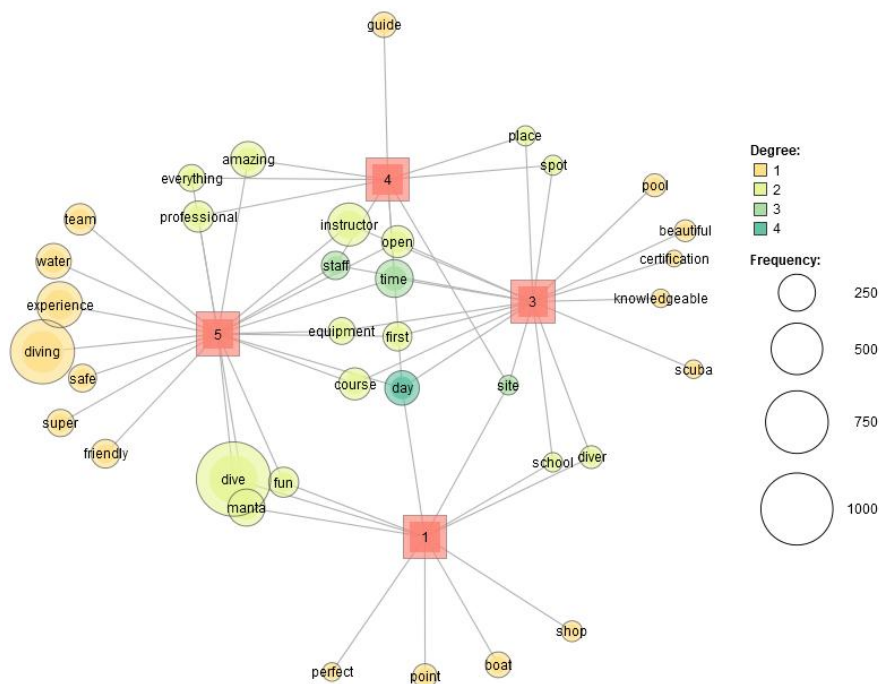


Source : Processed by Researchers

According to picture 2, the co-occurrence results based on the rating results network, we found 4 clusters that represent keywords mentioned in each rating scale. Degree explains how each term connects. The first degree explains that one term only connects one term to another, the second degree explains that one term connects to two terms, the third degree explains one term connects to three terms, and the fourth degree explains that one term connects to four. This means that second, third, and fourth degrees, it is possible that one term is mentioned on a 2,3 or 4 rating scale. Each term comes with a different size circle representing each total frequency, as explained in Table 6. Four clusters in co-occurrence rating results, namely:

1. Cluster 1 describes the terms used by those who rate 1 (very dissatisfied). The 11 terms that appeared are “perfect”, “point”, “boat”, “shop”, “fun”, “manta”, “school”, “site”, “day”, “dive”, and “diver”.
2. Cluster 2 describes the terms used by those who rate 3 (neutral). The 14 terms that appeared are site, “school”, “diver”, “scuba”, “knowledgeable”, “certification”, “beautiful”, “pool”, “spot”, “place”, “day”, “first”, “time”, and “open”.
3. Cluster 3 describes the terms mentioned by those who rate 4 (satisfied). The eight terms appeared: “open”, “instructor”, “spot”, “place”, “guide”, “amazing”, “everything”, and “professional”.
4. Cluster 4 describes the terms mentioned by those who rate 5 (very satisfied). The 19 terms that appeared are “amazing”, “professional”, “team”, “water”, “experience”, “diving”, “safe”, “super”, “friendly”, “dive”, “fun”, “course”, “equipment”, “first”, “day”, “staff”, “time”, “open”, and “instructor”.

Picture 2 Co-occurrence Rating Results



Source : Processed by Researchers

Table 7 shows two highlight results: the KMO result and Bartlett's chi square. If KMO (Kaiser Meyer Olkin) exceeds 0.6, applying factor analysis is appropriate (Feng & Chen, 2020; Matore et al., 2019; Noerhartati et al., 2023). Based on Table 7, the results of KMO = 0.645 indicates that factor analysis is appropriate. Bartlett's Chi-Square resulted in an X² value of 3263.078, indicating that the correlation matrix differed significantly from an identity matrix. The correlation matrix's overall significance was less than 0.001 ($p < 0.01$), suggesting that the data did not follow a multivariate normal distribution. This finding also confirms that the data follows a multivariate normal distribution, which justifies using exploratory factor analysis (EFA) (Watkins, 2018). At first, 39 words were obtained for the factor analysis. Then, using factor loading and a minimum coefficient of 0.4 as the criterion (Hair Jr et al., 2019; Noerhartati et al., 2023). 37 words were considered suitable for use because of the EFA. Concurrently, Cronbach's alpha (α) was employed as a metric to compute the internal consistency of the evaluation tool. The study reported Cronbach's alpha values ranging from 0.6 to 0.8, which are regarded to be within an acceptable range (Noerhartati et al., 2023; Shi et al., 2012). Thus, according to Table 7, factor 11 is being removed from the result due to its result being below the acceptable Cronbach's alpha values = 0.6. Exploratory Factor Analysis (EFA) is a valuable tool for assessing instrument consistency and evaluating measurement scales' accuracy. It helps determine if items effectively measure a particular characteristic and if they make substantial contributions to the identified factors (Finch, 2013; Sappaile et al., 2023). Exploratory Factor Analysis (EFA) is a statistical technique to detect hidden elements that impact a group of observed variables. It is beneficial for research that aims to reveal these underlying components (Alavi et al., 2020; Finch, 2013; Schreiber, 2021). There are ten factors identified by EFA namely :

1. Factors 1 consists of 5 terms namely “manta”, “ray”, “fish”, “turtle”, and “coral”. Factor 1 describes about the terms related to the sea creatures that can be found underwater. This explains the rich underwater marine biodiversity.
2. Factors 2 consists of 5 terms namely “open”, “water”, “course”, “certification”, and “instructor”. Factor 2 consists of open water course and its instructor and certification. The terms ‘open’, ‘water’, and ‘course’ may refer to PADI beginner certification class called “Open Water Diver” program. This explains about the important elements of instructor and certification of open water course that offers by the dive centers
3. Factors 3 consists of 4 terms namely “friendly”, “helpful”, “super”, and “boat”. Factor 3 describes the hospitality that being offered by the staff that is helpful, friendly, and super. There’s also the term “boat” appeared. The diving program offered by PADI includes boat trip to diving points. There will be staff helping at dive center and dive guide (which also staff) assisted on the boat and during dive experience. This may explain recreational divers’ experience with the staff at dive center, on the boat, and during diving experience.
4. Factors 4 consist of 4 terms namely “first”, “experience”, “time”, and “site”. Factor 4 describes divers’ first-time experience visiting the dive site. This suggests that most customers that came to dive centers are first-time visitors.
5. Factors 5 consists of 5 terms namely “equipment”, “spot”, “amazing”, “diver”, and “beautiful”. Factor 5 consists of two positive adjectives such as beautiful and amazing. There are also a connected terms which are diver and spot explains the dive spot for diver. There are various dive spot that offers to the divers such as Manta Point; Crystal Bay; Toyapakeh; Blue Corner; Mangrove; Gamat Bay; Sampalan and Karang Sari; Sampal, PED, and SD; Ceningan Wall; and TelukLembongan. For the term “equipment”, in diving, proper equipment plays a big role in diving experience. PADI dive center offers diving equipment facility for divers include in dive package. Thus, this indicates the importance of equipment in diving experience.
6. Factors 6 consists of 3 terms namely “pool”, “scuba”, and “day”. Factor 6 may reflect their experience during their dive course. Before diving underwater, the divers will receive a particular scuba diving skill education conducted in the designated swimming pool to practice their skills in a safe environment.
7. Factors 7 consist of 3 terms namely “fun”, “dive”, and “knowledgeable”. Factor 7 describes a PADI diving program called “Fun Dive.” This program can be taken by those who have obtained a minimum ‘Open Water’ certification. Fun Dive offers diving at several points, with a dive guide and proper equipment. This may suggest a potential link between a knowledgeable dive guide and the program.
8. Factors 8 consist of 3 terms namely “perfect”, “team”, and “place”. This possibly indicates customer satisfaction related to the service quality of the diving experience related to the staff and the place.
9. Factors 9 consists of 3 terms namely “school”, “diving”, and “safe”. Apart of PADI as diving school, PADI also offers an internationally recognized swim instruction program in affiliation with Starfish Aquatics Institute (SAI) swim school. Factor 9 highlights the credibility which reflects on safety of PADI program.
10. Factors 10 consists of 2 terms namely “staff” and “shop”. PADI Dive Center also has ‘dive shop’ as their business unit. PADI also does retail sales of recreational scuba diving equipment

and instruction. Thus, Factor 10 may highlight the interaction between customers and the staff at Dive Shop that relates to customer experience at Dive Shop.

Table 7 Result of the Factor Analysis

	Terms	Factor Loading	Cronbach α
Factors 1	Manta	.804	.753
	Ray	.741	
	Fish	.676	
	Turtle	.666	
	Coral	.591	
Factors 2	Open	.862	.630
	Water	.836	
	Course	.494	
	Certification	.446	
	Instructor	.406	
Factors 3	Friendly	.725	.348
	Helpful	.698	
	Super	.417	
	Boat	Below 0.4	
Factor 4	First	.628	.275
	Experience	.516	
	Time	.501	
	Site	Below 0.4	
Factor 5	Equipment	.544	.229
	Spot	.511	
	Amazing	.475	
	Diver	.444	
	Beautiful	Below 0.4	
Factor 6	Pool	.591	.364
	Scuba	.564	
	Day	.424	
Factor 7	Fun	.713	.286
	Dive	.420	
	Knowledgeable	Below 0.4	
Factor 8	Perfect	.603	.173
	Team	.590	
	Place	Below 0.4	
Factor 9	School	.689	.279
	Diving	.597	
	Safe	Below 0.4	
Factor 10	Staff	.660	.119
	Shop	.617	
Factor 11	Professional	-.614	-.063

	Point	.594	
KMO (Kaiser Meyer Olkin) = .645			
Bartlett's chi-square (p) = 3263.078 p< 0.001			

Source : Processed by Researchers

After exploratory factor analysis, researchers input and processed data for regression linear analysis. However, the dependent variable (rating review), as shown in Table 5, is constant. Regression linear analysis cannot be performed. There is no variation for the regression to explain. Regression analysis is not feasible for a dependent variable that remains constant since it violates the requirements of regression models. When the dependent variable remains constant, it contradicts the assumption of variability in the dependent variable, which is crucial for regression analysis to ascertain correlations between variables (Hedenstierna et al., 1981). Thus, the data analysed using SPSS is only presented until exploratory factor analysis is performed.

4.2 Discussion

Scuba diving is a widely recognized leisure pursuit that draws fans to several diving locations across the globe. Assessing diving experiences via online evaluations has become a crucial element in comprehending and enhancing the calibre of these experiences. Scuba diving sites worldwide can be categorized using user-generated ratings, which offer valuable insights for decision-making in different service areas (Yildirim et al., 2023).

Research using online review on diving experience is crucial. Through thorough analysis, researchers found 5 key-themes surrounding the topic, namely: rich underwater marine biodiversity; staff hospitality; dive certification program; diving spot; credibility and safety. The key-themes being formulated carefully to explain deeper about customer experience of recreational divers' in PADI-certified dive centers in Nusa Penida, Bali.

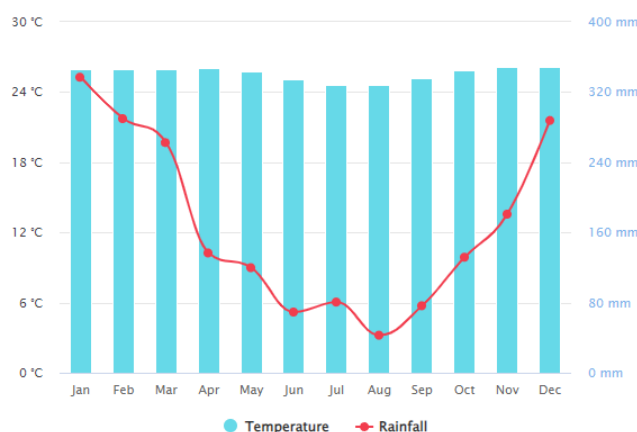
According to the co-occurrence rating result and keyword frequency, in Picture 2 and Table 6, the terms "dive" and "diving" appeared as the highest terms. This means that customers who go to dive centers are recreational divers or those who seek for diving experience. According to EFA analysis particularly Factor 2, Factor 7, and Factor 9, there are several keywords that implies to PADI programs such as Open Water Course, Fun Dive, and Swimming program. PADI Open Water Course and Fun Dive are those diving program which relates to divers certification. This is also supported by the appearance of keyword occurrence: "certification," which suggests the appeal of the diving program. This indicates the key theme "dive certification program".

The EFA analysis also supports these results in Table 7, Factors 2,4, and 9, which mentioned their experience in obtaining diving lessons at dive centers. The significant impact for better customer experience shown in EFA analysis in Table 7, Factors 3,5, 8, and 9 mentioned their positive emotion and interaction such as "amazing," "beautiful," "friendly," "helpful," "super," "safe," and "perfect". This implies to key themes of "staff hospitality" and "credibility and safety". The appeal of underwater recreational diving is shown in EFA analysis results in Table 7, namely Factor 1 and 5; Factor 1 describes the various underwater creatures that become underwater attractions, and Factor 5 describes diving spots that divers can access with support from the dive centers.

Experienced dive centers have mapped out the diving spots that are safe and have great underwater views and sightings.

The terms "diving" and "dive" also aligned with the co-occurrence result in Picture 1 and Picture 2. In Picture 2, they input "5" star ratings or are very satisfied with "dive" or "diving." According to Picture 2, the occurrence rating results in the term "site" connected to clusters 1,2 and 3 suggest that the term "site" greatly influences customer experience in recreational diving. The appeal of exploring underwater ecosystems, including natural coral reefs, artificial reefs, and submerged cultural heritage sites, is significant tourism of the diving site. Gaining insight into the variables that affect divers' preferences for dive sites, their actions, and the ecological consequence of diving is essential for dive sites' successful administration and long-term viability. The appeal of dive locations is predominantly influenced by aspects such as the variety of marine life, the richness of coral species, and the presence of distinctive underwater landscapes (Salleh et al., 2021). This finding also connects with connection of topic with key theme of 'rich underwater marine biodiversity'.

Figure 5 Diving Timeline in Bali



Source : (PADI, 2024b)

According to Picture 2, "day" is in the middle of the visualization result, considered part of the fourth degree. This means "day" in the recreational diver's eyes is crucial. According to (PADI, 2024b), Figure 5 is the figure arranged by PADI (Professional Association of Diving Instructors) (PADI, 2024b), the blue bar represents the temperature. The best time to explore dive sites in Indonesia is during the sunny and dry seasons, with stable temperatures of around 25-26°C from May to November. At the same time, red dots represent rainfall intensity, which indicates the rainy season, which may affect a lousy diving experience. It shows rainfalls are on the low stage from December to March, indicating the perfect time to explore Bali underwater. The term "day" is also supported by the terms occurrences of the term "time" in picture 2, which is part of the third degree. This explains the importance of understanding the weather to make sure that the divers are having their best experience diving in the ocean. According to (PADI, 2024b), Figure 5 also explains how weather and timeline affect the sightings of the underwater creatures; Bali is famous for its underwater creatures, which are Manta Rays, with the best season for sightings in April and May, while Mola-Mola with the best season for sightings from August to October. This aligns with

Picture 1 Cluster 1 and Table 7 Factor 1, which mentioned the richness of underwater creatures in Nusa Penida. This suggests that the sightings of underwater creatures affect the customer's satisfaction and experience.

Picture 2, cluster 1 describes the terms used by those who rate 1 (very dissatisfied); the terms that researchers would like to highlight are "point," "manta," "site," "day," "dive," and "diver." This suggests that dive centers must also focus on protecting and conserving the "point" and "site," which means diving points or diving sites, which are specific places or spots where the divers are diving to experience underwater. Specific recreational diving sites are also chosen for recreational divers to train and experience underwater. The diving points offer sightings of underwater creatures that require the natural marine environment. This indicates key theme of "diving point".

According to (Liao et al., 2019), coral reefs offer numerous intricate maritime habitats to sustain a diverse array of different organisms. Aside from corals, coral reefs are home to a variety of species including sponges, sea anemones, and coral algae. Research conducted by (Tito & Ampou, 2020) aims to evaluate the deterioration of the coral reef ecosystem in Nusa Penida, Bali. The findings show that the coral reefs of Nusa Penida, Bali, are degraded due to local stressors and global threats. An increase in algae characterizes this degradation cover, which is directly associated with a greater rate of coral mortality. Coral reefs are essential ecosystems critical in preserving ocean biodiversity and ecological equilibrium. (Liao et al., 2019). Recreational diving tourism has a negative effect on coral reefs due to direct contact with divers, resulting in damage, fragmentation, and the spread of diseases (Sumanapala et al., 2022). Engaging in recreational diving can result in significant physical harm to coral reefs, which has the potential to cause the complete destruction of their environment (De et al., 2020). Thus, researchers suggest that dive centers also focus on the sustainability of the marine environment and ecosystem of the diving spots.

Research conducted by (Naidoo et al., 2018) found the importance of sustainability in scuba diving through research using online reviews. (Naidoo et al., 2018) found that sustainability is a critical issue in scuba diving, particularly in small island destinations with distinctive biodiversity and delicate ecosystems. An analysis conducted in Mauritius examined 3109 text evaluations from the Trip Advisor website to evaluate the significance of sustainability in the scuba diving experience. The results suggested that although customers increasingly acknowledge sustainability as a significant aspect, there is still a requirement for more extensive data on how it impacts customer assessments of diving experiences.

5. CONCLUSION AND IMPLICATIONS

Nusa Penida, Bali a renowned diving destination situated off the coast of Bali, Indonesia, is home to multiple dive centers that offer exceptional diving facilities for divers worldwide. PADI certificates are widely acknowledged and trusted, serving as a standard of excellence and professionalism in the diving industry. The existence of PADI-certified dive centers in Nusa Penida demonstrates a dedication to maintaining industry norms and delivering outstanding diving opportunities for recreational divers. Researchers chose three PADI-certified dive centers, Purple Dive Penida, Legend Dive Lembongan, and Legend Diving Penida, as case studies.

The results from the raw data of online reviews of three selected Dive Centers show high ratings, with 99% of the ratings coming from 5 stars, which means customers are very satisfied with the experience at the selected Dive Centers. This is also supported by the terms occurrence result, which shows positive emotions and feedback such as “amazing,” “beautiful,” “friendly,” “helpful,” “super,” “safe,” and “perfect”. However, despite its positive feedback, diving tourism is a fragile industry since its overall customer satisfaction depends on the proper timeline related to its weather and underwater sightings. Thus, it is suggested that diving tourism management understand the importance of the proper timeline for recreational divers, which is supported by the high frequency of terms occurrence of “day” and “time.” The role of weather and timeline affecting the sightings of the rich underwater creatures during recreational diving may affect customer satisfaction and experience.

The findings suggest the importance of sustainability in operating and managing the scuba diving business, which is also shown by the term occurrence “site” or “point”. The term “point” or “site” means specific places or diving spots for the divers to experience underwater. This finding also connects with connection of topic with key theme of ‘rich underwater marine biodiversity’. The diving points offer sightings of underwater creatures that require the natural marine environment. The appeal of exploring underwater ecosystems drives significant tourism to diving sites. Recreational diving tourism has a negative effect on coral reefs due to direct contact with diver. The coral reefs of Nusa Penida, Bali, are degrading because of local stressors and global threats.

Researcher found 5 key-themes surrounding the topic, namely: rich underwater marine biodiversity; staff hospitality; dive certification program; diving spot; credibility and safety. The study of recreational divers’ experience at PADI-certified dive centers has study limitations. It is only applied at selected PADI-certified dive centers in Nusa Penida and cannot be applied to all dive centers in cultural or regional contexts. Given that reviews are likely written in multiple languages, there is potential for nuances or idiomatic expressions to be missed or misinterpreted. Additionally, the study's chronological frame provides a momentary glimpse, meaning that customer preferences, dive center management practices, and the nature of online review platforms might evolve. Nevertheless, online reviews remain a valuable tool for scholarly research. Future studies can build on these insights, delving deeper into the role of marine conservation as sustainability efforts of dive centers and recreational divers’ environmental consciousness in bringing balance between tourism and marine environment sustainability. It may involve other cities, countries, or other subjects of recreational divers based on online reviews.

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