

AN EXPLORATORY STUDY ON PROFESSIONAL COMPETENCIES OF SCUBA DIVE GUIDES IN MALAYSIA

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Abstract: Scuba diving is one of the fastest growing and most popular tourism activities, generating approximately a billion dollars for global diving destinations. Scuba diving tourists are willing to travel worldwide to experience diving activities at island destinations offering underwater attractions. Besides highlighting the uniqueness of dive sites, the performance of dive guides can influence a scuba diving tourists' satisfaction. This exploratory study examines the influence of the dive guides' professional competencies on satisfaction of the tourists with availing tour packages by assessing the dive guides' service quality. This study reports the findings obtained from the responses of 345 dive tourists who have availed of diving packages in Malaysia. This study validates that professional competency among dive guides positively affects service quality and a tourists' satisfaction. Among the findings is the importance of scuba diving operators in providing continuous practical implications to dive guides in order to help them identify their niche market of scuba diving tourists.

Keywords: Scuba dive industry, scuba dive guide, scuba dive operator, professional competency.

Introduction

The tour-guide profession which plays a crucial role in connecting host destinations and visitors is the core of the tourism industry (Li *et al.*, 2014). Tour guides can be viewed as tour leaders, interpreters, pathfinders, mentors, and storytellers for tourists (Li *et al.*, 2017). In addition, the guides are the frontline employees who bear the responsibility of creating an overall impression and satisfaction with the services offered at the destination (Ap & Wong, 2001). Therefore, tour guides are critical in the maintenance of sustainable operations of travel agencies in the tourism industry (Pereira & Mykletun, 2012). Their professional skills can determine tourists' experiences with guided tours and influence their memories of a destination (Mak, 2011; Al Jahwari *et al.*, 2016). Tour guides are professionals who influence a tourists' first impressions of a destination and their experiences (Leclerc & Martin, 2004).

Therefore, the tourism industry has sought to improve the tour guides' professional competencies, which are considered critical aspects of a tour guide performances (Ap & Wong, 2001; Mak *et al.*, 2010).

Based on the definition described by the International Association of Tour Managers and the European Federation of Tourist Guide Association, a tour guide is an individual who 'guides groups or individual visitors from abroad or from the home country around the monument, sites, and museums of a city or region; to interpret in an inspiring and entertaining manner, in the language of the visitor's choice, the culture and natural heritage and environment' (Ap & Wong, 2001). The definition describes how a dive guide can convert the diver's tour into an experience. This study perceives that a dive guide exhibits similar roles and functions as a tour guide. A quality tour guide service benefits the travel agency financially and enhances the destination's

image. The professional competencies of tour guides can be considered as part of the travel product, as their competencies can influence visitors' views on a tour guide service quality and improve tourist satisfaction (Lin *et al.*, 2017).

Scuba diving tourism is as one of the fastest growing tourism niches and multi-billion-dollar industry (Queiroz Neto *et al.*, 2017). The global demand for scuba diving tourism continues to increase. The Professional Association of Diver Instructors (PADI), the largest certification agency, estimates that more than 28 million diving certificates have been issued since 1967 (Professional Association of Diver Instructors, 2021). In the Malaysian context, the tourism industry has received special attention from the government since the 1980s. Nonetheless, the Malaysian government has shifted its focus to developing niche tourism rather than conventional tourism such as beach resorts, with a lot of competition at the regional and global levels (Hampton *et al.*, 2018). The Eleventh Malaysia Plan (2016-2020) fosters nature and adventure tourism to capitalise on the country's "world class" eco-tourism potential, particularly the rainforest and coral reefs. Scuba diving tourism is particularly viewed as a fast-expanding, high-yield tourism sector in Malaysia.

Although tour guides services have existed for almost as long as travel, the professional competencies of tour guides have gained limited attention in tourism literature. Theoretical literature on the topic is also scarce (Lin *et al.*, 2017). Similarly, little work has been undertaken to explore the effects of dive guides' professional competencies dive guide service quality and divers' satisfaction with diving tour packages. Therefore, the purpose of this study was to examine the theoretical and practical implications of dive guides' professional competencies and explore their contributions to service quality and diver satisfaction of dive guides. This research papers three primary research objectives are:

1. What are the specific content with regard to knowledge, skills, and attitudes that characterise a dive guides' professional competencies?
2. How will a dive guides' professional competencies influence a divers' satisfaction in terms of service quality?
3. How will a dive guides' service quality influence the divers' satisfaction with the dive package?

Literature Review

Activity Competency Model

Studies on the understanding of the significance of competency development and management as essential tools to increase a firms' competitiveness are emerging (Lee, 2010). In terms of strategic operation, a company's competitiveness stems from its core competencies, which constitutes to the collective learning in the organisation. These core competencies are the source of competitive advantage, permitting organisations to offer new products and services (Prahalad & Hamel, 1990). In terms of human resource development, competencies are commonly perceived as measurable patterns of knowledge, skills, abilities, behaviours, and other characteristics that distinguish high performance from average performance (Athey & Orth, 1999; Rodriguez *et al.*, 2002). Organisational competencies can be divided into employee-level or organisational level. The organisational-level competencies are embedded in employee-level competencies, which are further subdivided into technical competencies (job-related skills and knowledge) and behavioural competencies (personal attributes or characteristics) (Cardy & Selvarajan, 2006; Lee, 2010).

This study refers to the previous study by Lin *et al.* (2017) that applied the Activity Competency Model (ACM) (Wu *et al.*, 2007) to investigate the dive guide professional competencies in their research. The ACM was expanded based on the Job Characteristics Theory (JCT), which states that individuals with sufficient knowledge and skills to function

will positively affect their job performance. In contrast, individuals with insufficient knowledge and skills will negatively affect their job performance. Individuals who desire personal progress are predicted to exhibit increased internal drive, particularly when assigned to a difficult task. Hackman and Oldham (1980) stated that skill variety is an important trait that influences how individuals feel about their work and whether it appears meaningful. They highlighted that knowledge and skills are job characteristics that contribute to an individual's psychological state, knowledge, and skills, while attitude contributes to job motivation and performance.

By referring to JCT, Wu *et al.* (2007) introduced the ACM to determine the working view of professional workers' job functions and roles, hence directing the research into critical activities the workers undertake and the required knowledge, skills, and attitude. The professional roles and functions determine job activities executed by professional workers and are at the top of the ACM. Professional workers must master their job activities to perform specific job responsibilities and positions (Lin *et al.*, 2014; Lin *et al.*, 2017). Proficiency in each critical activity is contingent upon mastery of the fundamental competencies at the knowledge, skill, and attitude levels. The proficiency levels can be viewed as foundational competencies contributing to an organisation's overall success. From the perspective of ACM, a skill, knowledge, or attitude is described as a talent that can be developed, is not necessarily innate, and is manifested in performance, not only potential (Kuo *et al.*, 2018). The tour guide also has an obligation to provide the visitor with a memorable experience (Weiler & Ham, 2002).

The roles played by tour guides throughout the trip bear the critical responsibility of providing good, instant, inseparable, intangible, and favourable services to tourists and also supporting the operation of agencies or companies in the tourism industry (Wang *et al.*, 2010). They must successfully improve their work functions and role performances and thoroughly understand the scope of their

responsibilities and contributions (Su *et al.*, 2014). The ACM serves as a solid foundation and is instrumental in providing guidance for investigating the hierarchical dimensions of scuba dive guides' knowledge, skills, and attitude requirements regarding the effectiveness of the scuba diving package and the performance outcomes of their job functions in this study.

Scuba Dive Guides' Roles and Professional Competencies

Tour guides are entertainers, information and knowledge providers, caretakers, innovators, leaders, and cultural brokers (Cohen, 1985; Reisinger & Steiner, 2008). Tour guides perform four essential duties based on these roles: Instrumental, social, interactionary, and communicative (Cohen, 1985). Additionally, the four categories of tour guides are originals, animators, tour leaders, and professionals. Each role focuses on a specific function. Cohen (1985) proposed that originals are the pathfinders, including choosing a route, splitting it up, and making it accessible to reach their objectives. Tour guides are pathfinders responsible for helping tourists discover meaning in what they see (Reisinger & Steiner, 2008).

The animators, on the other hand, conduct a more sensitive role by interacting and engaging with visitors, being amiable, and respecting their decisions. (Cohen, 1985). The animators must have specific personalities, such as being easy-going and knowledgeable of the culture in the destination, to communicate freely with tourists (Lin *et al.*, 2014). Tour leaders perform the interconnecting function by facilitating interaction between the tourists and the environment (Cohen, 1985). In order to carry out their obligations with the least amount of opposition, tour leaders are accountable for educating tour participants, ensuring that all trip plans are followed, serving as mediators, and maintaining strong relationships with all group members (Chowdhary & Prakash, 2009).

On the other hand, professionals play the communicative function, which involves transferring detailed information and interpreting

attractions, sites, and experiences (Reisinger & Steiner, 2008). Cohen (1985) asserted that professionals are similar to mentors and serve four distinct functions: (1) To choose an itinerary that is appropriate for their client in terms of what to see and experience, (2) to provide accurate information, (3) to interpret what is observed and experienced and (4) to fabricate information. Nevertheless, the fabrication should not be intended to cheat the clients but to entertain them (Lin *et al.*, 2014). Tour guides can also be referred to as storytellers that deliver meaningful trips to tourists (Weiler & Ham, 2002; Alazaizeh *et al.*, 2019; Hwang *et al.*, 2020; Zahari *et al.*, 2020). Therefore, they are anticipated to have various skills, knowledge, and behaviours (Kuo *et al.*, 2018; Syakier & Hanafiah, 2021). Professional tour guides are essential, especially when guiding tourists in nature-based tourism and eco-tourism, emphasising the detrimental impact on the natural environment and the degradation of the flora and faunas' natural habitats (Randall & Rollins, 2009; Lin *et al.*, 2014). In this sense, a professional is the most appropriate word to describe a dive guide.

Tour guides are an essential part of the tourism business and their services are mainly based on their professional competencies (Mao & Wang, 2010; Hoarau, 2014; Su *et al.*, 2014). According to McClelland (1973), who proposed the term 'competency,' intelligence (knowledge and skills), cognition, attitude, and personality traits are essential components in achieving outstanding job performance. In addition, Jarvis (1981) proposed that professional competencies are primarily related to individual tasks. Professional competency is the professional knowledge, abilities, and attitude required for an individual to fulfil their obligation in an organisation. Professional knowledge refers to the understanding expected from tour guides when conducting tour groups.

Similar to tour guides, scuba dive guides help recreational divers experience wonderful travelling diving experiences. They effectively submerge the divers within the sightseeing underwater spots thoughtfully. Therefore, scuba

dive guides should have professional knowledge needed to guide recreational divers. In addition, the positive professional attitude of scuba dive guides helps bridge the gap among tourists, tour guides, and travel agencies (Lin *et al.*, 2017). A positive professional attitude is crucial for excellent tour guides to successfully guide tour groups (Curtin, 2010; Green & Jones, 2010), which applies to scuba dive guides.

The professional competencies of tour guides are a mix that includes various types of tourism-related knowledge, skills, and attitude. Tour guides must undergo long-term learning and training, from acquiring certificates to professional competence development (Curtin, 2010). Training, professional certification, and licensing have the most significant effects on improving guiding performance (Rosemary & Betty, 2005). Thus, the specialisations will influence tour guides to perform better, efficiently, and measured by specific standards (Chowdhary & Prakash, 2008).

Service Quality of Dive Guiding

Despite the two distinct concepts, conceptual confusion exists between service quality and visitor satisfaction. The expectancy disconfirmation theory states that expectation levels are the criteria used to confirm or disconfirm a decision (Parasuraman *et al.*, 1985; Crompton & Mackay, 2009). According to the notion, if expectations are satisfied, service quality and satisfaction are regarded as appropriate. However, if service quality or customer satisfaction fall short of expectations, expectations are negative. In contrast, if customer satisfaction or service performance exceeds expectations, expectations are positive. Dive guides (service providers) may regulate service quality qualities but they cannot directly influence total diver (visitor) happiness, as demonstrated by a crucial contrast between these two notions (Crompton & Love, 2016). Despite having a similar theoretical foundation, the two conceptions are very different.

The notion of service quality indicates customers' perceptions of the services and

facilities offered (Chen *et al.*, 2016). Service delivery (interpretation and interaction between staff and customers) and facilities (toilets, signs, and roads) are examples of associated attributes (Parasuraman *et al.*, 1985; Žabkar *et al.*, 2010). The service quality of tour guides comprises their service attitude, service efficiency, friendliness, and unforgettable experience for tourists (Chand, 2010). Service quality has the potential to impact tourist satisfaction substantially. Upgrading or improving the service quality of dive guides (tour guides) benefits not only tourists but is also a critical factor for the continued operation of travel agencies (Mason & Nassivera, 2013), which includes scuba diving operators.

The service quality of scuba dive guides is one of the most crucial success factors in marine tourism. Service delivery processes (efficiency, reliability, friendliness, courtesy, and guide competency) and outputs of services (diving facilities, activities, and experiences) delivered by dive guides create service quality in dive tourism. As a result, divers and the local environment of dive sites or islands are moderated by dive guides and scuba diving operators. The local landscape of places and customs may be approached by tourists with the help of good tour guides (Wang *et al.*, 2010). Scuba dive guides can enhance a recreational divers' knowledge, relax their physical, mental, and spiritual states and help recreational divers create good memories.

Recreational divers can judge the level of service provided by scuba diver guides, which affects how they perceive scuba diving operators in general. By assessing the discrepancy between the expectations of service and the actual sentiments experienced by recreational divers, it is possible to assess the service quality of a scuba dive guide. As a result, this study draws the conclusion that a divers' opinions of the quality of the service provided by dive guides may be influenced by their professional abilities. Thus, the following hypothesis is proposed:

H1: There is a positive direct effect between a dive guides' professional competencies and service quality.

Diver Satisfaction

Unlike service quality, which assesses outputs cognitively, satisfaction assesses the psychological effects of an individual's experience (John *et al.*, 1991; Oliver, 2018). The degree to which a customer's expectations about the advantages of a good or service are met determines whether they are satisfied. (Chen & Chen, 2010). Customer satisfaction is referred to as a feeling or an event. External elements including the physical environment, group dynamics, social considerations, and psychological states of people or interactions between people and places have an impact on the attitude or image, sentiments, and attachment (Tahir *et al.*, 2010). Thus, diver satisfaction is subjective and can be impacted by external circumstances, such as the weather or the dynamics of the dive trip group. The diver's diverse mental experiences can enhance diver satisfaction following the dive guides' tour activities. The divers' satisfaction is the divers' mental state after the recreational experiences. Satisfaction is uncontrollable, unlike service quality, because satisfaction is a psychological consequence or emotional reaction (del Bosque & San Martín, 2008).

According to Kotler (1997), a customer's happiness or dissatisfaction with the discrepancy between their expectations and the product's perceived efficacy is measured by satisfaction. As a result, consumer satisfaction is connected to their subjective assessments and felt emotions (Oliver, 2018). Thus, improving customer satisfaction may help generate profits, save business costs, create good word-of-mouth, and increase customers' intention to repurchase (Chiang & Chen, 2014). The first impressions and happiness of travellers with tour packages provided by travel agencies or tourism businesses may be impacted by the service quality of tour guides (Kuo *et al.*, 2018). By focusing on the needs and desires of visitors, tour guides and travel companies may enhance tour offerings and service quality and increase visitor happiness. The basis of tour guides' professional competencies can enhance work

output and visitors' opinions on the level of service (Leclerc & Martin, 2004).

Measurement of a tourists' views of service quality and satisfaction is essential because it enables service providers, like dive guides, to track their performance and pinpoint areas where improvements in service quality may be necessary (Tomas *et al.*, 2010). High service standards and customer satisfaction are commonly believed to result in favourable word-of-mouth recommendations, referrals, and repeat business in the tourist sector, which eventually has an impact on travel and tourism enterprises (Chiang & Chen, 2014). Additionally, in a competitive environment, managerial success is viewed as being dependent on how well visitors are treated (del Bosque & San Martín, 2008). Travel operators must improve their staff's competencies and establish a good relationship with their customers to ensure tourist satisfaction is achieved (Syakier & Hanafiah, 2021). Therefore, many studies utilise visitor satisfaction to gauge pleasure with both specific features or traits and the entire visitor experience.

Conclusively, the professional competencies of dive guides can influence divers' satisfaction with dive-guiding tour packages, including recreational and leisure experiences. Diver satisfaction increases as service quality improves. Thus, scuba diving operators need to prioritise how to satisfy the recreational diversity of their clients. This study concludes that the service quality of dive guides directly impacts divers' satisfaction with dive-guide tour

packages provided by scuba diving operators. Hence, the following hypotheses are proposed:

H2: There is a positive direct effect between dive guides' professional competencies and a divers' satisfaction.

H3: There is a positive direct effect between dive guides' service quality and a diver satisfaction.

H4: There is a positive indirect effect between a dive guides' professional competencies and a divers' satisfaction through service quality.

Methodology

Measurement Development

This research was conducted using a quantitative approach. Since limited research focuses on scuba dive guides, no complete scales was suitable for this study. The initial data collection phase involved an extensive literature review (Kuo *et al.*, 2018; Ninpradith *et al.*, 2018; Gerungan & Chia, 2020) and telephone interviews with two dive guides, two owners or managers of scuba diving operations and three recreational divers for an instrument development from March to April 2021. Based on the initial data collection input and adaptation from previous instruments (refer to Table 1), a construct with 33 items relevant to a dive guides' competencies, which constituted a significant part of the questionnaire, was developed. Nevertheless, from the 345 questionnaires collected, 56 were omitted due to poor data quality such as respondents answered the same answer for all questions.

In this study, the data was analysed using the Statistical Package for Social Sciences

Table 1: Dive guide competencies measurement development

Construct	No. of Items	Source
Professional knowledge	8	Lin <i>et al.</i> (2017), Kuo <i>et al.</i> (2018)
Professional skills	9	Al Jahwari <i>et al.</i> (2016), Lin <i>et al.</i> (2017)
Professional attitude	7	Lin <i>et al.</i> (2017), Kuo <i>et al.</i> (2018)
Service quality	6	O'Neill <i>et al.</i> (2000), Heung (2008), Lin <i>et al.</i> (2017)
Diver satisfaction	3	Rodger <i>et al.</i> (2015)

(SPSS) 26 software for the descriptive analysis. SmartPLS version 4 software was employed to address the hypotheses, including identifying the direct effect between professional competencies, service quality, and diver satisfaction and the indirect effect between dive guides' professional competencies and a diver satisfaction through service quality.

The study adopted a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree) to assess respondents' rating on the importance of professional competencies of a dive guide, service quality, and recreational diver's satisfaction with their diving package trip experience. The demographic data of the respondents was evaluated in the last portion of the online survey.

A pilot survey was conducted on a small sample involving 12 respondents who were not part of this study to identify and eliminate potential errors. Several minor changes were made to the wording of the questions to improve the clarity and reliability of the instruments. Finally, after the questionnaire was finalised, potential respondents among recreational scuba divers who had purchased and experienced diving package trips in Malaysia were subsequently contacted. The target population of this study was recreational scuba divers who had experienced diving in diving destinations in Malaysia. Due to unavailable data on the total number of recreational divers with relevant experience in Malaysia, this study employed purposive sampling, a form of non-probability sampling technique to collect data. The second phase involved an online survey strategy using snowballing and purposive sampling among recreational scuba divers who had experienced these package trips in Malaysia. The recreational scuba divers were contacted through two approaches. First, they were invited to participate in the survey via email. The emails belonged to scuba divers who are from the Malaysia Scuba Diving Association (MSDA) members. Secondly, group members of Malaysia's multiple scuba and dives related group pages on Facebook were approached

online, individually. All the participants were invited to participate in the survey. Finally, 345 questionnaires were collected between May and July 2021. Nevertheless, of the 345 completed questionnaires collected, only 289 were useable for data analysis.

The data was analysed using SPSS 26 software for descriptive analysis in this study. SmartPLS version 4 software was employed to answer the hypotheses, including identifying the direct effect between professional competencies, service quality and diver satisfaction and the indirect effect between dive guides' professional competencies and diver satisfaction through service quality.

Data Analysis and Findings

The SmartPLS software is one of the structural equation modelling (SEM) used for prediction variable purposes (Hair *et al.*, 2017). Component-based estimation is used by the PLS, hence, multivariate normality of the data is not necessary (Gefen *et al.*, 2011) and can handle formative constructs. PLS is generally better suited of expressing complicated connections because it avoids the two major issues of inadmissible solutions and factor indeterminacy (Lohmöller, 1989). According to Hair *et al.* (2019), PLS software was conducted for formative measurements in the research model. The employment of PLS software is in line with this study framework model that uses a formative second-order (high-order) construct, namely professional competency measured by the three dimensions: Professional attitudes, professional knowledge, and professional skills. Furthermore, this approach is suitable for this study because of the ability of PLS to assess the measurement model within the context of its theoretical mediated model makes it superior to multiple regressions. Besides, it also provides reliable and valid indicators for measuring the respective constructs.

Table 2 presents the profile demographic of 286 respondents who had dived with dive guides in Malaysia. Approximately 33.2% were female

Table 2: Demographic profile

Profile	Frequency (n =286)	Percentage (%)
Gender		
Female	95	33.2
Male	191	66.8
Nationality		
International	8	2.7
Malaysian	278	97.3
Age (years)		
20-29	23	8.0
30-39	117	40.9
40-49	106	37.1
50-59	32	11.2
60 and above	8	2.8
Education level		
Secondary school	17	6.0
Certificate/Diploma	87	30.4
Bachelor's degree	133	46.5
Master's degree	41	14.3
PhD/DBA	8	2.8

while 66.8% were males. Besides, the majority were Malaysian (97.3%), and the others (2.7%) were Australian, Austrian, Dutch, Egyptian, Chinese (Hong Kong), Swiss and British (United Kingdom). Moreover, most respondents were 30 to 39 years old (40.9%) and 40 to 49 years old (37.1%). Additionally, the majority of them held a Bachelor's degree (46.5%), followed by a certificate or diploma (30.4%), Master's degree (14.3%), secondary school (6%), and PhD or DBA (2.8%).

Table 3 shows the number and percentage of respondents with regards to their monthly

income. Most respondents had an income between RM4,850 to RM10,959 (54.5%), followed by less than RM4,850 (30.8%) and above RM10,959 (14.7%).

Table 4 shows the dive information, including the number of dive logs, scuba certification level, diving destination experience, and own personal diving gear. The majority (32.5%) recorded between 501 dive logs and more. Besides, more than 10% of respondents stated that they had dive logs of 51 to 100, 101 to 250 and 251 to 500, respectively. Most respondents held Advanced Open Water Diver

Table 3: Income

Income	Frequency (n = 286)	Percentage (%)
Less than RM4,850	88	30.8
RM4,850 – RM10,959	156	54.5
Above RM10,959	42	14.7

Table 4: Dive information

Dive Information	Frequency	Percentage (%)
Number of dive logs		
0-5 dives	10	3.5
6-20 dives	23	8.0
21-50 dives	21	7.4
51-100 dives	46	16.1
101-250 dives	57	19.9
251-500 dives	36	12.6
501 dives and more	93	32.5
Scuba certification level		
Open Water Diver/Equivalent	51	17.8
Advanced Open Water Diver/Equivalent	109	38.2
Rescue Diver/Equivalent	24	8.4
Divemaster/Equivalent	37	12.9
Dive Instructor/Equivalent	49	17.1
Dive Instructor Trainer/Equivalent	16	5.6
Dive Information	Frequency	Percentage (%)
Diving destination experience		
Domestic (Malaysia)	96	33.6
Domestic (Malaysia), international	151	52.8
International	39	13.6
Own personal diving gear		
No	30	10.5
Yes	256	89.5

or equivalent certificates (38.2%), followed by an Open Water Diver or equivalent certified (17.8%) and were Certified Dive Instructors (17.1%). In contrast, 12.9% were Divemaster or equivalents, 8.4% were Rescue Diver or equivalent, and 5.6% were Dive Instructor Trainers or equivalent. Furthermore, around 33.6% had domestic (Malaysia) diving experience, 52.8% had both domestic and international experiences, and 13.6% had been involved in international destination diving. Nevertheless, most respondents (52.8%) had domestic (Malaysia) and international diving experience. Besides, most of them (89.5%) owned personal diving gear.

Amounts spent annually on diving accessories or equipment and trip aspects are presented in Table 5. Most respondents (58.4%) spent around RM2,000 and below on diving accessories or equipment, followed by 15.0% spending between RM2,001 and RM5,000 or between RM5,001 and RM10,000 (5.2%). Less than 1% of respondents spent more than RM15,000. On the other hand, most respondents (32.9%) spent between RM2,001 and RM5,000 on diving trips, followed by 32.5% who spent around RM2,000 or less, 12.9% spent between RM5,001 and RM10,000 while less than 2% of respondents spent more than RM10,000.

Table 5: Yearly amounts spent on diving.

Yearly Amounts Spend on Diving Accessories/Equipment	Frequency	Percentage (%)
RM2,000 and below	167	58.4
RM2,001-RM5,000	43	15.0
RM5,001-RM10,000	15	5.2
RM15,001-RM20,000	2	0.3
Greater than RM30,000	2	0.7
None	58	20.3
Trip		
RM2,000 and below	93	32.5
RM2,001-RM5,000	94	32.9
RM5,001-RM10,000	37	12.9
RM10,001-RM15,000	5	1.7
RM15,001-RM20,000	6	2.1
RM20,001-RM25,000	3	1.0
RM25,001-RM30,000	1	0.3
Greater than RM30,000	3	1.0
None	44	15.4

Sample Size Determination

The sample was assessed using power analysis provided by Green (2010) to determine whether the sample was adequate to conduct the Variance-Based Structural Equation Modelling (VBSEM). According to Ramayah *et al.* (2019) and Ngah *et al.* (2019), the power of analysis can be used to determine the sample size based on the number of predictors. As suggested by Gefen *et al.* (2011), with a power of 80%, medium effect size and $p = 0.05$, the sample size of this study is 286. The sample size achieved the requirement of the minimum sample of 66.

Normality Test

Table 6 shows that the data was not multivariate: Mardia's multivariate skewness with $\beta = 13.929$,

$p < 0.01$ and Mardia's multivariate kurtosis with $\beta = 96.412$, $p < 0.01$. As the data did not meet normality requirements, the data was analysed using SmartPLS.

Common Method Bias

The common method bias should be implemented since the questionnaires or forms were answered by respondents (Podsakoff *et al.*, 2003). A high correlation between the two constructs indicates the existence of the common method bias. The marker variable technique is performed to test whether a common method bias exists in the relationship between the two constructs since the requirement of Harman's single-factor test and multicollinearity test (Variance Inflation Factor - VIF) are not fulfilled. According to

Table 6: Multivariate skewness and kurtosis

	b	z	p-value
Skewness	13.929	759.108	0.000
Kurtosis	96.412	11.731	0.000

Table 7: Common method bias using marker variable technique

Effect	R^2 (without marker)	R^2 (with marker)	R^2 Change
PC $\rightarrow$ SQ	0.720	0.720	0.000 (0%)
PC $\rightarrow$ SQ $\rightarrow$ SA	0.596	0.596	0.000 (0%)

Lindell and Whitney (2001), the relationship between the constructs is free from common method bias if the change of R^2 (the difference between R^2 without marker variable and R^2 with marker variable) does not exceed 10% (Table 7).

The result of common method bias using the marker variable technique shows no R^2 change for the direct effect of professional competencies and service quality. Nevertheless, the finding also showed no R^2 change for the indirect effect between professional competencies, service quality, and tourism satisfaction. Therefore, no common method bias was found in the relationship between the constructs.

Measurement Model

The measurement and structural model are determined using SmartPLS 3.0. The measurement model is measured based on convergent validity and discriminant validity. Convergent validity must be achieved to ascertain that all items in the construct are strongly correlated. Since each construct included one item that measures the entire construct, the item does not need to be used for the measurement model. Therefore, 5 items were excluded from 5 constructs and 28 items were used to implement the convergent validity and discriminant validity. Hence, the value of outer loading should exceed 0.5 and can be better if greater than 0.7, the composite reliability exceeds 0.7. The Average Variance Extracted (AVE) value should be greater than 0.5 to achieve this requirement. Besides, discriminant validity can be achieved when a low correlation exists between items in the different constructs. Thus, the discriminant validity can be determined based on the value of the Heterotrait-Monotrait (HTMT) ratio of the correlation's method, which comprises HTMT criterion and HTMT

inference. The discriminant validity is fulfilled if the HTMT criterion of the constructs in the model is greater than 0.85 or 0.90 (subject to the value obtained) and the upper confidence interval of HTMT is less than 1.

Convergent Validity

The results of convergent validity are shown in Table 8. Professional competency is known as the second order (high order) construct comprising of three dimensions: Professional attitudes, professional knowledge, and professional skills. In contrast, service quality and tourist satisfaction are the first-order constructs. Four items in professional attitudes (PA1, PA3, PA6, and PA7) and one item (PS1) in professional skills were omitted due to the high correlation between service quality and personal skills items. Nevertheless, the outer loading fulfils the requirement of Cronbach's Alpha. The composite reliability for all constructs was greater than 0.7 while AVE values for all constructs exceeded 0.5. Cross-loading is commonly the correlation coefficient of an item and construct. On the other hand, the AVE being greater than 0.5 indicates more than 50% variance of construct was caused by its items. Besides, the high composite reliability shows that the items are reliable and have high consistency in measuring their construct. Therefore, five of the 28 items (17.8%) were eliminated.

Discriminant Validity

The discriminant validity is achieved if all the HTMT values are less than 0.85. Hence, $HTMT_{0.85}$ is selected as the reference. If the lowest value of HTMT is less than 0.85 and less than 0.90, $HTMT_{0.90}$ is followed (Henseler *et al.*, 2015). The value of the HTMT inferred can be referred to from the bootstrapping procedure, where the

Table 8: Convergent validity

Constructs	Outer Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Professional competencies				
Professional Attitudes (PA)				
PA2	0.916	0.901	0.904	0.835
PA4	0.897			
PA5	0.929			
Professional Knowledge (PK)				
PK1	0.815	0.929	0.930	0.701
PK2	0.825			
PK3	0.836			
PK4	0.859			
PK5	0.859			
PK6	0.844			
PK7	0.821			
Professional Skills (PS)				
PS2	0.711	0.937	0.942	0.730
PS3	0.894			
PS4	0.886			
PS5	0.821			
PS6	0.902			
PS7	0.882			
PS8	0.867			
Service Quality (SQ)				
SQ1	0.803			
SQ2	0.921	0.948	0.948	0.951
SQ3	0.905			
SQ4	0.908			
Tourist Satisfaction (SA)				
SA1	0.974	0.907	0.913	0.784
SA2	0.976			

upper confidence interval should be less than 1. Table 9 shows the result of discriminant validity based on the HTMT criterion which is based on $HTMT_{0.85}$. All constructs show the value of

HTMT was less than 0.85 ($HTMT_{0.85}$) and the upper confidence interval of HTMT was less than 1 ($HTMT_{inference}$). The value indicated that the discriminant validity is achieved.

Table 9: Discriminant validity

Constructs	Professional Attitudes	Professional Knowledge	Professional Skills	Service Quality	Tourist Satisfaction
Professional attitudes					
Professional knowledge	0.712				
Professional skills	0.823	0.787			
Service quality	0.748	0.6	0.718		
Tourist satisfaction	0.840	0.727	0.839	0.793	

Note: Value in parentheses in lower and upper confidence intervals of HTMT

Convergent Validity for Formative High-order Construct

Convergent validity was also identified for formative high-order construct (professional competencies) based on redundancy analysis with a global item. Convergent validity would be achieved if VIF was lower than or equal to 3.3 (Diamantopoulos & Siguaw, 2006) and the significance weight of relationship for the overall items and global item was greater than or equal to 0.7 (Hair *et al.*, 2017). The results (refer to Table 10) showed that the formative construct achieved convergent validity since it fulfils all the requirements.

Structural Model (Repeated Measure)

The study's model used repeated measures, to measure the second-order constructs. The structural model was determined through a bootstrapping procedure with 5,000 resampling based on the value of β (coefficient), t-statistics, p-value and Lower Level (LL) and Upper Level (UL) confidence intervals that fulfils the requirements as suggested by Hair *et al.* (2017). The relationship or effect between constructs is significant and directly affects the t-statistics which was greater than 1.645.

The finding shows that the relationship between professional competencies and service

Table 10: Convergent validity for formative high-order construct

High-order Construct	Lower Order Construct	Convergent Validity (Significance of Weights)	Weight	t-Value	VIF
Professional competency	Professional attitudes	0.945	0.276	19.796	2.504
	Professional knowledge		0.378	26.990	2.301
	Professional skills		0.446	29.481	3.106

quality is significant and the path coefficient is positively related ($\beta_1 = 0.829$, $t = 27.571$; $LL = 0.763$, $UL = 0.879$, $p < 0.001$). Therefore, H_1 is supported (Table 11). Besides this, the relationship between professional competencies and tourist satisfaction is also significant and the path coefficient is positively related ($\beta_2 = 0.359$, $t = 4.754$; $LL = 0.220$, $UL = 0.517$, $p < 0.001$). Hence, H_2 was supported. Additionally, H_3 is also supported as the service quality positively affects tourist satisfaction ($\beta_3 = 0.440$, $t = 5.480$; $LL = 0.270$, $UL = 0.580$, $p < 0.001$). All these three relationships (professional competencies $\rightarrow$ service quality, professional competencies $\rightarrow$

tourist satisfaction and service quality $\rightarrow$ tourist satisfaction) are free from multicollinearity issues since their respective value of VIF is less than 5.

The hypothesis test found H_4 had an indirect effect (mediation analysis) which is shown in Table 12, involving the indirect relationship between professional competencies and tourist satisfaction mediated by service quality. The indirect relationship indicates that there are significant results with the t-statistics of 5.544 (greater than 1.645), $\beta = 0.364$ (Confidence Interval: 0.224, 0.482) and $p < 0.001$. The

Table 11: Hypothesis testing of direct effects

Direct Effects	β	Standard Error	t-Statistics	p-Value	Confidence Interval (CI)		VIF	Hypothesis
					Lower Limit (LL)	Upper Limit (UL)		
H1. Professional competencies $\rightarrow$ Service quality	0.829	0.030	27.571	0.000	0.763	0.879	1.000	Supported
H2. Professional competencies $\rightarrow$ Tourist satisfaction	0.359	0.076	4.754	0.000	0.220	0.517	3.107	Supported
H3. Service quality $\rightarrow$ Tourist satisfaction	0.440	0.080	5.480	0.000	0.270	0.580	3.198	Supported

Table 12: Hypothesis testing of indirect effects

Indirect effects	β	Standard Error	t-statistics	p-value	Confidence interval (CI)		Hypothesis
					Lower Limit (LL)	Upper Limit (UL)	
H4. Professional competencies $\rightarrow$ Service quality $\rightarrow$ Tourist satisfaction	0.364	0.066	5.544	0.000	0.224	0.482	Supported

positive value of β shows a positive indirect effect between professional competencies and tourist satisfaction mediated by service quality. Hence, H_4 is also supported.

Variance Accounted For (VAF) is applied to determine the types of mediators (Hair *et al.*, 2017). The value of $VAF < 20\%$ indicates no mediation, $20\% \leq VAF \leq 80\%$ for partial mediation while $VAF > 80\%$ for full mediation. Therefore, the VAF for the final model is calculated as follows:

$$VAF = [0.829 \times 0.359] / [(0.829 \times 0.359) + 0.440] = 0.403$$

Hence, the value of VAF for the model is 0.403 or 40.3%. The result is characterised as a partial mediation (refer to Figure 1).

The structural model of this study can be viewed in detail, as illustrated in Figure 2.

The findings for R^2 and f^2 are depicted in Table 13. The value of R^2 represents the total variances is endogenous explained by all the exogenous constructs. According to Urbach and Ahlemann (2010), the value of R^2 should be high for the model to achieve a minimum level of explanatory power. The R^2 value of 0.584 indicates that the exogenous construct (professional competencies) explains a 58.4% variance of the endogenous construct (service

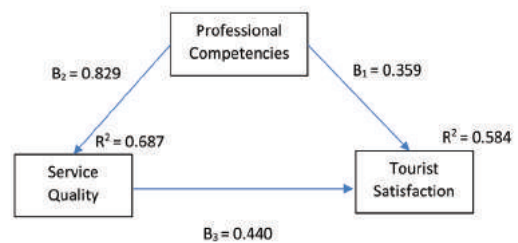


Figure 1: Final model

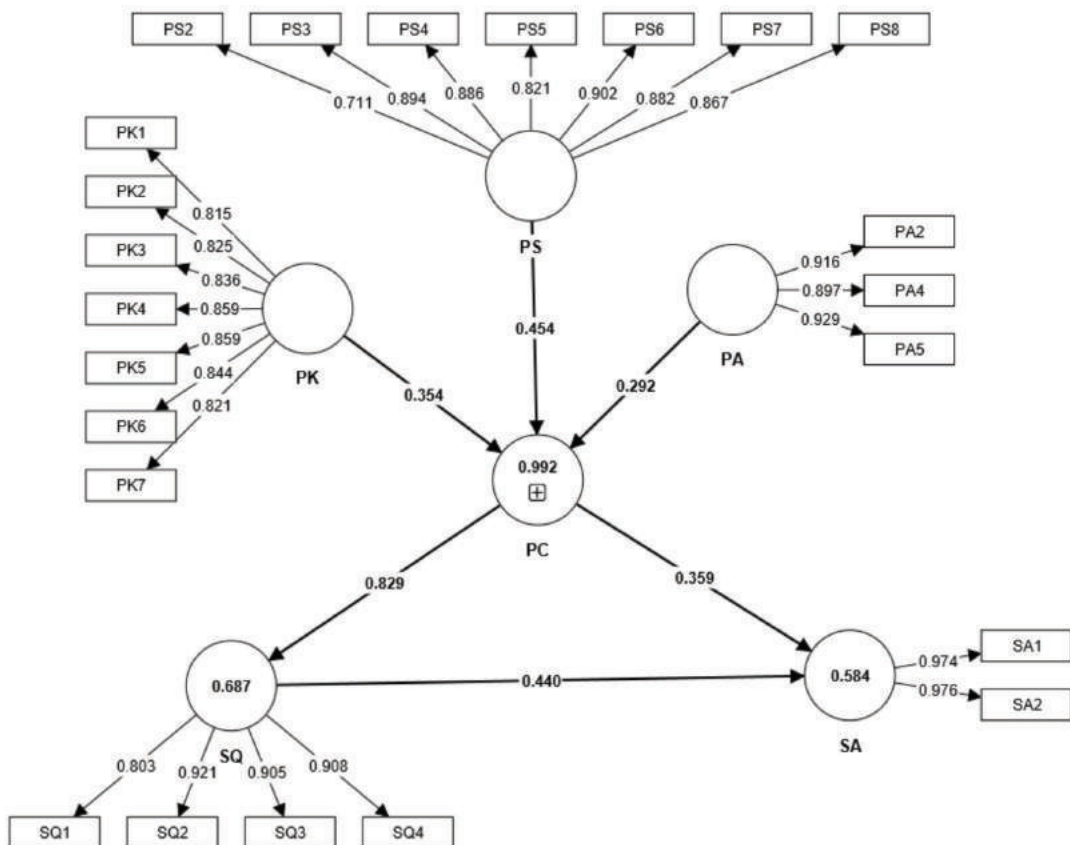


Figure 2: Structural model

quality). By contrast, the value of $R^2 = 0.687$ shows that professional competencies explain a 68.7% variance of the endogenous construct (tourist satisfaction). The value of $f^2 = 2.198$ (> 0.35) shows professional competencies highly affect service quality. Professional competencies have a small effect on tourist satisfaction with the value of $f^2 = 0.097$ (> 0.02). Moreover, the value $f^2 = 0.145$ (> 0.02) implies that service quality has a small effect on tourist satisfaction.

Table 14 illustrates the analysis of the PLS prediction. If most of the differences (value of PLS RMSE subtracted by LM RMSE) are lower than 0, the model has strong predictive powers. Based on the results, the model has strong predictive power since most items for all exogenous variables are lower than the values of linear modelling.

Discussion

This study explored how a dive guide competencies contribute to the service quality and diver satisfaction when the later purchases diving packages. The literature review proposed that professional knowledge, professional skills, and professional attitude influences the image of tour guides. Unlike existing research, this

study suggests a model where professional competencies concept is applied to the dive guides in conjunction with the understudied concepts, service quality and diver tourists' satisfaction in the scuba diving industry.

As predicted, this study found that professional competencies (H_1) were a significant factor of service quality. The findings are similar to Lin *et al.* (2017) and Ninpradith *et al.* (2018). Dive guides with higher knowledge, skills, and attitude can meet a diver tourists' expectations of service quality experience during the scuba diving trip. Hence, dive guides who have mastered diving skills must possess a broad spectrum of diving knowledge to satisfy different scuba tourists' needs. Professional specialities include underwater photography skills, knowledge of marine invertebrates, diving equipment, technology, and diving gadgets. Scuba diving operators must concede the importance of continuous training of such skills to enhance their job functions and performance. Continuous training acts as the firm base and instrumental guidelines for guiding effectiveness and performance outcomes.

These results also support previous research found a positive relationship between professional competencies and tourist satisfaction (Syakier

Table 13: Results of R^2 and f^2

Direct Effect	R^2	f^2	Result
Professional competencies → Service quality	0.584	2.198	High
Professional competencies → Tourist satisfaction	0.687	0.097	Small
Service quality → Tourist satisfaction		0.145	Small

Table 14: PLS predict

Item	PLS RMSE	LM RMSE	PLS-LM	Q^2 Predict
SA1	0.542	0.564	-0.022	0.475
SA2	0.567	0.580	-0.013	0.472
SQ1	0.707	0.701	0.006	0.414
SQ2	0.546	0.563	-0.017	0.578
SQ3	0.574	0.607	-0.033	0.526
SQ4	0.614	0.614	0.000	0.544

& Hanafiah, 2021). Professional competencies (H_2) were positively related to diver satisfaction. Besides sharpening diving knowledge, dive guides must possess adequate information on the tourism industry's various components: The 5A's (accessibility, accommodation, attractions, activities, and amenities) of their surrounding destinations. The ability to suggest available accommodations, options on travelling routes, local foods or restaurants to explore, and other recreational and leisure activities available at the local destinations will uplift the diver tourists' satisfaction and elevate the dive guide's role in the tourism industry.

Finally, this study found that service quality (H_3) positively influenced diver satisfaction. This finding corroborates the evidence presented by Velez *et al.* (2018) whereby the service quality of tour guides and visitor satisfaction are significantly influenced by the professional competencies of dive guides. Due to dive guides' professional qualifications (knowledge, skills, and attitude), the service quality components have a direct impact on tourist divers' satisfaction. In other words, as the tourism sector is a people-to-people industry, tourist divers' differences can be bridged by the professional skills of dive guides. Diver satisfaction will be significantly increased by enhancing the professional competencies of dive guides, which will enable diver tourists to recognise the high level of service.

Conclusion

This study evaluated the relationship between dive guides' professional competencies, service quality, and scuba tourist satisfaction. The results of the tests indicated that professional competencies and service quality directly impacted recreational diver's satisfaction. Hence, the findings strongly support the need for scuba diving operators to innovate an update diving packages. This study also suggests that improving professionalism among dive guides in Malaysia will allow the country to offer higher standards of service quality in the diving industry.

Academic Implications

This study provides a comprehensive insight into the relationship between professional competencies (knowledge, skills, and attitude) and service quality on diver tourists' satisfaction as there is limited research on dive guides' performance in the tourism industry. This research paper attempts to bridge the knowledge gap in the field of tourist guides, particularly with regard to the scuba diving industry. From the perspective of ACM, this study provides a comprehensive understanding of the relationship between the variables. By developing a multi-component model of professional competencies, service quality, and tourist satisfaction, the professional competencies of dive guides is an essential factor for recreational divers to be satisfied with the services offered.

Practical Implications

The dive guide certification is based on the Recreational Dive Supervisor Standards (2009), also known as Divemaster, Dive Control Specialist, and Dive Coordinator, depending on the diving certification agency. The guidelines set the level of optimum training of dive guides consisting of dive management skills focused on a skillset that permits dive guides to conduct services in the scuba diving industry without the marine ecosystems and hospitality components.

The key element of a destination is based on the 5As: Attractions, activity, accessibility, accommodation, and amenities. Knowledge of these five elements will accelerate tourism operators' service quality and hospitality services by sharing extensive information with tourists (Sunetra *et al.*, 2014). These components will help improve the quality of services provided by the operators and increase the number of tourists arrivals at dive sites in Malaysia. The extension of skills related to hospitality and marine ecosystems is also expected to help dive guides provide better service.

Decision-maker Implications

Malaysia's tourism authority needs to recognise the role of dive guides as valuable; as nature guides and city guides promote tourism. Establishing a system of official licensing among dive guides in Malaysia is necessary to ensure that the industry's operations are conducted according to the standards of practice. The tour guide professionals need steady income based on a minimum standard and should have an employment contract as per the Malaysian employment system. The move will help develop the local diving industry and provide job opportunities for islanders at diving sites in Malaysia.

The quality and performance of dive guides should be acknowledged at the national level to support the diving industry in Malaysia. The acknowledgement will set a higher standard and level of service within the profession. Conducting improper and harmful practices, such as hiring a travelling dive guide while exploring a specific tourism destination, could threaten the stability of the diving industry and disrupt the local dive guide market. The authorities must not allow such practices. These practices should be regulated or banned.

Limitations and Suggestions for Future Research

Similar to other research, limitations exist in this study. This study was undertaken using samples of dive tourists who had experienced diving from unknown diving operators in Malaysia. Hence, the findings should be considered with some degree of caution. The findings do not generalise to all dive guides in Malaysia. Similar studies should be undertaken by focusing on specific destinations and dive operators should increase research validity and compare the differing degrees of dive guides' professionalism. Opportunities exist for comprehensive research into professional competencies within the dive guide and scuba diving industry. This study aims to constitute a practical first step on this process.

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