

Using The Theory Of Planned Behavior To Explain And Predict Behavior Intentions in Taiwan

Cheng-Lung Wu, National Penghu University of Science and Technology, Taiwan

ABSTRACT

This study aims to use the theory of planned behavior to verify undergraduates' behavioral intentions regarding their participation in aquatic sports. Undergraduates in Taiwan serve as the research subjects and a survey method employs questionnaires. A total of 200 valid questionnaires were received out of 230, thus giving a valid response rate of 86.9%. The information was analyzed with AMOS 19.0. The research results show that: First, attitudes do not have a significant influence on the behavioral intentions; Second, subjective norms do not have a significant influence on the behavioral intentions; and Third, perceived behavior control has a significant influence on the behavioral intentions. It is expected that the results of this study can serve as reference for strategies and measures to promote aquatic sports in universities as well as agencies in the aquatic sports industry in Taiwan.

Keywords: Behavior Intentions; Theory Of Planned Behavior; Aquatic Sports; Behavioral Tendency

INTRODUCTION

Since the Sports Affairs Council (now the Sports Administration) put forward the Marine Sports Development Program in 2002, increased attention has been paid to aquatic sports on the part of schools and the public. Surrounded by seas and abounding with tourism resources on its offshore islands, Taiwan should be a country highly suitable for the promotion of aquatic sports. Nevertheless, as Lu (2006) points out, despite the government's active efforts to promote related policies, the traditional fear of water or tragedies caused by the lack of safety measures in relevant sites have been holding the public back from participating more fully in aquatic activities. Therefore, in recently years, the Sports Administration has vigorously promoted a variety of sports programs. For example, in 2012, the Sports Administration set up the Implementation Directions to Subsidize the Promotion of Swimming and Aquatic Sports in Schools, in order to enhance students' swimming ability, improve their safety awareness and self-rescuing ability, increase the opportunities for students to experience and learn about aquatic sports, encourage students to choose aquatic sports as a life-long habit, and select schools suitable for the promotion of swimming and aquatic sports.

Moreover, in 2014, the Sports Administration formulated the Sports Island Establishment Project, which includes aquatic sports as one of the key items for promotion. In the meantime, with the promotion of a two-day weekend, people have more chances to engage in aquatic leisure activities, such as swimming, rafting and snorkeling. The summer vacation in particular is the peak time when young people participate in aquatic activities. The establishment of related departments also helps undergraduates to obtain further understanding of aquatic activities. According to Huang (2008), many universities and colleges in Taiwan have set up related departments and institutes in compliance with the promotion of aquatic sports by the Ministry of Education. After the Taipei City Physical Education College established the Department of Aquatic Sports in 1998, the National Penghu Institute of Technology (now National Penghu University of Science and Technology) set up the Department of Marine Sports and Management in 2004 (renamed the Department of Marine Sports and Recreation in 2006), Aletheia University set up the Department of Aquatic Sports in 2005 (renamed the Department of Aquatic Sports and Leisure in 2006),

and National Kaohsiung Marine University set up four departments, including the Department of Aquatic Sports Management.

All of these events add momentum to the development of aquatic education in Taiwan. It is observed from the literature on aquatic sports in Taiwan that most of the previous studies focus on the perception and benefits of aquatic sports (Kuo, 2008), motivations of participation (Lee, 2009; Chen & Lai, 2009), recreation conflicts (Wu, 2003), trends of development (Su & Chiu, 2005; Huang & Huang, 2006), marine sports tourism (Chang, 2009) and discussions based on the theory of planned behavior (Hsu & Pan, & Huang, 2011). However, there are relatively few studies on undergraduates' attitudes toward choosing aquatic sports and factors affecting their attitudes. These issues are important because they can serve as reference for aquatic sports management, and enrich studies on aquatic sports. Therefore, this study uses undergraduates participating in aquatic sports as the research subjects, and adopts an empirical method to verify the model built based on the theory of planned behavior. Suggestions are also provided at the end of this study.

LITERATURE REVIEW

An overview of the related literature reveals that most of the discussions on behavioral intentions are developed based on Ajzen's theory of planned behavior. Ajzen (1985) believes that the theory of planned behavior can effectively explain and predict intentions or behavior. He assumes that three variables: attitudes, subjective norms and perceived behavioral control, affect one another, while intentions are affected by different levels of attitudes, subjective norms, and perceived behavioral control. In other words, prior to acting, people need to have an intention to engage in the following behavior. The theory of planned behavior stresses that "attitudes" are an individual's positive or negative feelings about a certain behavior. They result from an individual's beliefs regarding the possible outcomes of engaging in that behavior, multiplied by his/her evaluation of the outcomes. In this study, if an undergraduate believes that participating in aquatic sports brings about positive feelings or benefits, s/he holds a positive attitude toward such participation. "Subjective norms" are the social pressure stemming from an individual's perception of engaging in a certain behavior. It is the result of the normative belief of an individual's important others who think the individual should or should not engage in that behavior, multiplied by the individual's motivation to, or not to, comply with the opinions of important reference groups. In this study, if an undergraduate's important reference groups, such as parents, teachers and seniors, support his/her participation in aquatic sports, and s/he follows the opinions of these important others, s/he is subject to stronger subjective norms. "Perceived behavioral control" emphasizes an individual's subjectively perceived ease or difficulty in engaging in a certain behavior. It is the result of the individual's control belief of the resources, or impediments to his/her engagement in that behavior, multiplied by the individual's perceived ability to control the resources or impediments. In other words, if an undergraduate possesses basic skills or related knowledge of an aquatic sport, s/he has better behavioral control over, and higher interest in, that aquatic sport. The empirical research of Kwan, Bray and Martin (2009) suggests the validity of the theory of planned behavior in predicting behavioral intentions towards sports. Kouthouris and Spontis (2005) also prove the applicability of the theory of planned behavior to studies on outdoor sports. In other words, it is feasible to use the theory of planned theory to find the influence of undergraduates' attitudes, subjective norms, and perceived behavioral control on the intentions to participate in aquatic sports.

There is not a lot of literature that applies the theory of planned behavior to aquatic sports. Yen, Hsu and Pann (2012) adopted the theory of planned behavior as the basis of their study and used related theories to rectify attitudes into intervening variables, thus creating a mediation model on the intentions of tourists who engaged in aquatic sports in the Kenting area. Dai, Wang, Kao, and Lee (2012) use the behavioral tendency of tourists engaging in aquatic leisure activities in Penghu to examine the suitability of applying the theory of planned behavior to predicting the behavioral tendency of engaging in these activities. They also use it to analyze the major factors affecting the behavioral tendency of tourists to engage in aquatic leisure activities in Penghu, thus discovering the strategies to effectively promote their engagement in aquatic leisure activities in Penghu. Chang (2008) uses the theory of planned behavior to explore undergraduates' behavior in regard to participating in surfing. He discovered that the combination of behavioral beliefs can effectively predict attitudes, the combination of normative beliefs can predict subjective norms and the combination of control beliefs can effectively predict perceived behavioral control. Wu (2010) adopts the theory of planned behavior as the basis of her study to validate the goodness-of-fit of the

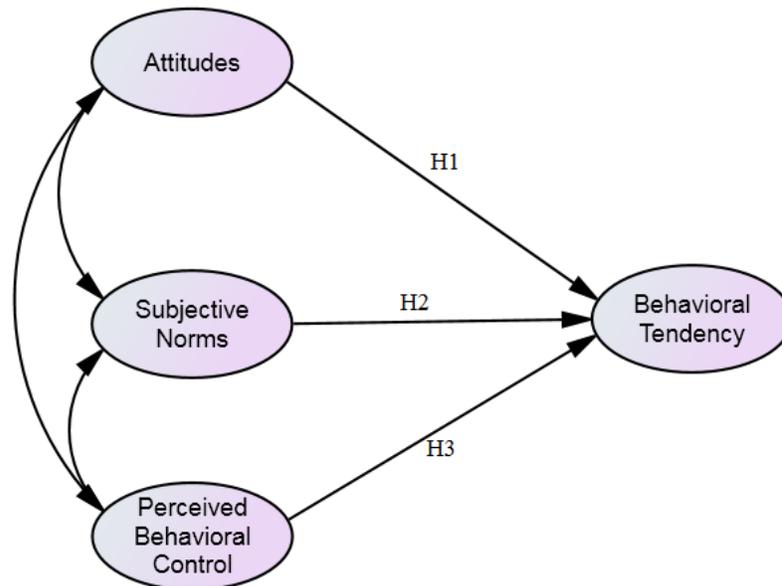
theoretical model and observation information of “Behavioral Tendency Model of Water Sports in Kenting.” She further analyzes the causal relationship between the behavioral tendency of water sports tourists in Kenting and various factors. From the aforementioned literature, it is known that most of the previous studies focus on a single aquatic sport or area. However, there are sport, leisure and tourism-based aquatic activities. This study uses undergraduates in Taiwan as the research subjects and presents their behavioral intentions to participate in different types of aquatic sports.

RESEARCH METHOD

Research Framework

The research framework of the behavioral model of undergraduates participating in aquatic sports is constructed based on the research objectives and literature related to the theory of planned behavior. The research framework is shown in Figure 1.

Figure 1. The Diagram of the Research Framework:
Attitudes, Subjective Norms, Perceived Behavioral Control, Behavioral Tendency



Research Hypotheses

Hypothesis 1: Attitudes have a significant influence on behavioral intentions.

Hypothesis 2: Subjective norms have a significant influence on behavioral tendency.

Hypothesis 3: Perceived behavioral control has a significant influence on behavioral tendency.

Research Subjects

This study aims to explore the influence of four factors: attitudes, subjective norms, perceived behavioral control and behavioral tendency in the theory of planned behavior, on the behavioral model of undergraduates participating in aquatic sports. It uses a questionnaire as the survey method and purposive sampling to sample undergraduates from northern, central and southern Taiwan serving as the research subjects. A total of 230 questionnaires were issued. After excluding invalid ones, this study received 200 valid questionnaires, for a valid response rate of 86.9%.

Research Tools

Design of the Scale

The scale of this study is a modification of the scale of the behavioral tendency of aquatic sport tourists of Green Island, designed by Hsu, Pan and Huang (2011). The scale includes four dimensions: attitudes, subjective norms, perceived behavioral control, and behavioral tendency. It has a total of 18 items.

Scoring of the Scale

The scale of this study is scored based on the 7-point Likert scale. Ranging from seven to one point, the answers range from strongly agree, agree, mildly agree, neutral, mildly disagree, disagree to strongly disagree, respectively.

RESEARCH RESULTS

Characteristics of the Samples

This study uses descriptive statistics to analyze the information distribution of the samples (see Table 1). In terms of gender, there were 105 males, accounting for 52.5% of the 200 valid samples, and 95 females, accounting for 47.5%. It shows that most of the undergraduates participating in aquatic sports are males. With regard to the types of schools they attend, most of them are from universities of science and technology, accounting for 74.5% of the valid samples. General universities follow it with 25.5% of the valid samples. As for the year of study, most of them are sophomores, accounting for 50.5% of the valid samples. It is followed by freshmen, accounting for 30.0%. The fewest are juniors, accounting for 7.5%. It shows that most of the undergraduates participating in aquatic sports are sophomores. In terms of “with or without previous experience in aquatic sports,” most of them have previous experience, accounting for 72.5% of the valid examples. Those without previous experience accounting for 27.5%, follow it. It shows that most of the undergraduates have experience in marine sport tourism.

Table 1. Characteristics of the Samples

Variable	Category	Count	Percentage	Accumulative Percentage
Gender	Male	105	52.5	52.5
	Female	95	47.5	100.0
School	General University	51	25.5	25.5
	University of Science and Technology	149	74.5	100.0
Year of Study	Freshman	60	30.0	30.0
	Sophomore	101	50.5	80.5
	Junior	15	7.5	88.0
	Senior	24	12.0	100.0
With or Without Previous Experience in Marine Sport Tourism	Yes	145	72.5	72.5
	No	55	27.5	100.0

Measurement and Analysis of the Structural Modeling

This study first analyzes the information via the structural equation modeling. It used standardized coefficient and MI value as the basis for deleting variable parameters. Items such as A2, A6, C1 and D3 were deleted, while the rest were kept (Chen, 2007).

Verifying the Convergent Validity

This study analyzes the convergent validity of the four dimensions: attitudes, subjective norms, perceived behavioral control, and behavioral tendency of the theory of planned behavior. The loadings of all dimensions range between 0.55 and 0.92, the composite reliability ranges between 0.83 and 0.88, and the average variances extracted

range between 0.62 and 0.65 (see Table 2). All the values meet the standards suggested by Hair, Anderson, Tatham and Black (1998), showing that this scale has convergent validity.

Table 2. Analysis of the Convergent Validity of the Theory of Planned Behavior

Dimension	Index	Standardized Factor Loading	Non-standardized Factor Loading	S.E.	C.R. (t-value)	P	SMC	C.R.	AVE
Attitudes	A1	0.59	1.00				0.35	0.88	0.65
	A3	0.90	1.58	0.18	8.90	***	0.80		
	A4	0.88	1.53	0.17	9.04	***	0.78		
	A5	0.81	1.23	0.14	8.60	***	0.65		
Subjective Norms	B1	0.76	1.00				0.58	0.88	0.65
	B2	0.80	1.25	0.11	11.63	***	0.65		
	B3	0.87	1.33	0.11	12.18	***	0.76		
	B4	0.80	1.17	0.10	11.41	***	0.63		
Perceived Behavioral Control	C2	0.75	1.00				0.56	0.83	0.62
	C3	0.87	1.11	0.09	11.85	***	0.75		
	C4	0.73	1.00	0.10	9.81	***	0.53		
Behavioral Tendency	D1	0.88	1.00				0.78	0.84	0.64
	D2	0.92	1.05	0.06	17.20	***	0.85		
	D4	0.55	0.58	0.07	8.34	***	0.30		

Verifying the Discriminant Validity

Table 3 shows the bootstrapped 95% confidence intervals of correlation coefficients of the theory of planned behavior. It is discovered from Table 3 that the correlation coefficients of all dimensions do not include 1, meaning that there is a low degree of correlation among the four dimensions: attitudes, subjective norms, perceived behavioral control, and behavioral tendency of the theory of planned behavior. Therefore, the theory of planned behavior of this study has discriminant validity (Wu, 2009).

Table 3. Bootstrapped 95% Confidence Intervals of Correlation Coefficients of the Theory of Planned Behavior

Parameter	Estimates	Bias-corrected		Percentile method	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound
Attitudes <--> Subjective Norms	0.50	0.31	0.68	0.29	0.66
Attitudes <--> Perceived Behavioral Control	0.48	0.30	0.61	0.30	0.61
Attitudes <--> Behavioral Intentions	0.48	0.31	0.64	0.31	0.65
Subjective Norms <--> Perceived Behavioral Control	0.75	0.65	0.84	0.64	0.84
Subjective Norms <--> Behavioral Intentions	0.68	0.49	0.81	0.50	0.81
Perceived Behavioral Control <--> Behavioral Intentions	0.77	0.61	0.87	0.62	0.87

Overall Analysis

For the overall analysis, this study uses seven indices: χ^2 test, χ^2 and its degree of freedom ratio, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), root mean square error of approximation (RMSEA), comparative fit index (CFI) and parsimonious comparative fit index (PCFI), to verify the goodness of fit between the samples and the hypotheses. The χ^2 and its degree of freedom ratio in this study is 2.33, which is smaller than 3. The GFI, AGFI, RMSEA, CFI and PCFI are 0.90, 0.85, 0.08, 0.95 and 0.74, respectively. After correction, all the values of the goodness of fit, as shown in Table 4, fall within the acceptable range (Wu, 2009), showing a considerable level of goodness of fit between the samples and hypotheses, and that the model of this study is acceptable.

Table 4. Analysis of Goodness of Fit of the Model

Goodness-of-Fit Index	Acceptable Range	Before Correction	After Correction	Goodness of Fit of the Model
χ^2 (Chi-square)	Smaller the Better	483.04	165.24	Pass
χ^2 and Its Degree of Freedom	<3	3.74	2.33	Pass
GFI	>0.80	0.78	0.90	Pass
AGFI	>0.80	0.70	0.85	Pass
RMSEA	<0.08	0.12	0.08	Pass
CFI	>0.90	0.86	0.95	Pass
PCFI	>0.50	0.72	0.74	Pass

Figure 2. Diagram of the Behavioral Model of Undergraduates’ Participation in Aquatic Sports

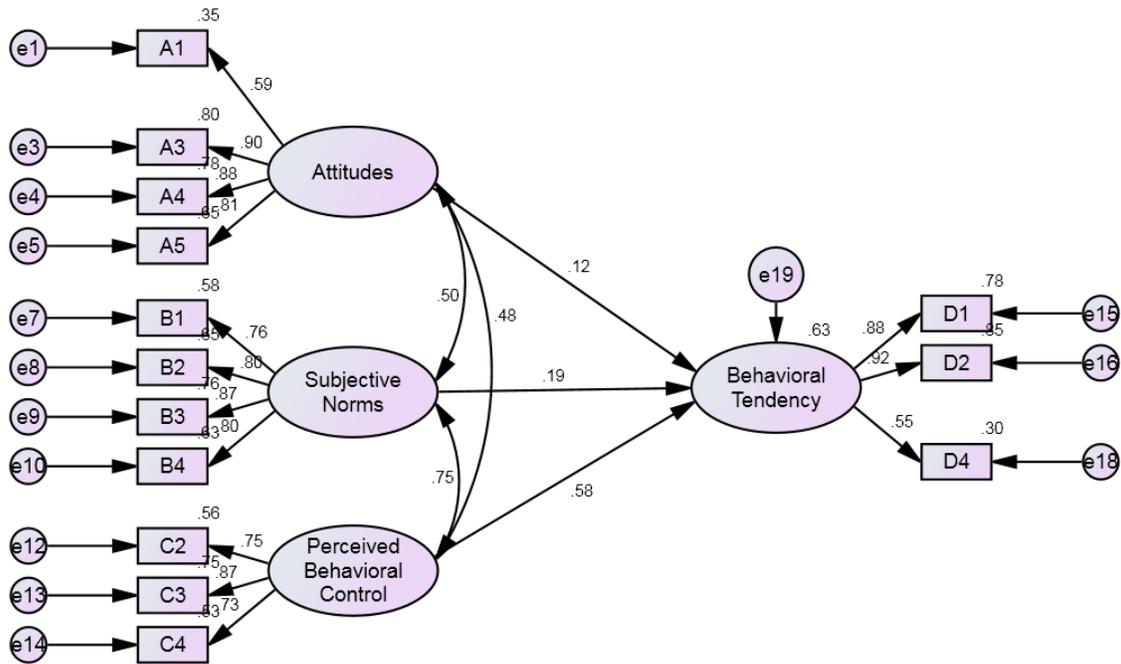


Table 5. Empirical Results of the Research Hypotheses

Hypothesis	Path Relationship	Path Value	Does the Hypothesis Hold
1	Attitudes → Behavioral Tendency	0.12	No
2	Subjective Norms → Behavioral Tendency	0.19	No
3	Perceived Behavioral Control → Behavioral Tendency	0.58*	Yes

It is known from Table 5 that Hypothesis 3 holds, meaning that perceived behavioral control has a significant influence on behavioral tendency. Both Hypotheses 1 and 2 do not hold, meaning that undergraduates’ behavior of engaging in aquatic sports is not subject to the influence of attitudes or subjective norms. The results of this study differ from those of Dai, Wang, Kao and Lee (2012). A possible explanation is that undergraduates have higher autonomy and are less likely to be influenced by their important others. On the other hand, when seeing their classmates enjoying their engagement in aquatic sports, undergraduates may participate as well, due to peer pressure, regardless of their own positive or negative opinions toward aquatic sports.

CONCLUSIONS AND SUGGESTIONS

Conclusions

This study adopted the theory of planned behavior and used undergraduates as its research subjects to construct behavioral intentions of their participation in aquatic sports. After an empirical analysis, three major conclusions are drawn from this study.

First, in this study males account for 52.5% of the valid samples, while females account for 47.5%, showing that most of the undergraduates participating in aquatic sports are males. With regard to the types of schools, most of them are from universities of science and technology, which account for 74.5% of the valid samples. As for the year of study, most of them are sophomores, which account for 50.5% of the valid samples. In terms of “with or without previous experience in aquatic sports,” most of them have previous experience, which account for 72.5% of the valid examples. Second, after correction, all goodness-of-fit indices in this study fall within the acceptable range.

Third, of the three hypotheses in this study, both Hypotheses 1 and 2 do not achieve a level of significance, while Hypothesis 3 holds.

Suggestions

After the empirical analysis of the information, this study proposes several suggestions based on the research results to aquatic sports participants and managers.

For aquatic sports managers

It is known from this study that attitudes and subjective norms do not have a significant influence on undergraduates' behavioral tendency regarding participation in aquatic sports. In other words, undergraduates may participate in aquatic sports due to invitations from peers or out of curiosity, and they may neglect the dangers of aquatic sports and their own skills in engaging in such sports. As a result, there is usually a frequent occurrence of drowning involving undergraduates and young people during summer vacation. Hence, it is suggested that aquatic sports managers take safety precautions concerning aquatic sports. For instance, there are often swells caused by typhoons along the coast of Kenting in the summertime. Despite the effort of the management of the Kenting National Park to put up red flags along the beach to warn tourists not to go into the sea, some still ignore or do not understand the warning. As a result, several accidents happen every year.

In this regard, the management of the Kenting National Park set up a new regulation, based on which red flags will be put up to prohibit tourists from going to the sea whenever waves reach one meter in height. Persons ignoring the warning will be immediately subject to a penalty of NTD 3,000. This measure is taken to solve the problem that many tourists ignore the warning of red flags due to the fact there used to be only exhortations without penalties. With the regulation and penalty clause, it is expected that accidents can be prevented. It is suggested that other aquatic sports managers can follow suit and set up related regulations to actively protect the safety of tourists.

Moreover, many large music festivals nowadays are held on beaches, and the festive atmosphere of these activities attracts many energetic undergraduates to participate. However, some of these activities take place in areas adjacent to dangerous waters. For instance, the estuary of the Daku River in Guanyin Township is categorized as one of the top ten dangerous waters in Taoyuan County. No aquatic activities are allowed here according to the Statute for the Development of Tourism, with fines ranging from NTD 5,000 to 25,000. Even so, the Taoyuan Coastal Rock n' Roll Festival was still held here. Although the area used to be a lido, there are undercurrents and hidden whirlpools; victims are prone to be dragged to the open sea where they may drown. Therefore, it is suggested that the water management authority consider the approval of related activities based on the suitability of the water areas, in order to protect the safety of those involved.

For undergraduates participating in aquatic sports

It is known through this study that undergraduates' behavior of participating in aquatic sports is subject to the influence of perceived behavioral control. Therefore, it is suggested that undergraduates understand their own competency, i.e. whether or not they have control over their skills before engaging in aquatic sports. Aquatic sports involve unpredictability. Those lacking good swimming skills or knowing the water areas in question face danger; they should not venture to participate in these activities. It is also suggested that undergraduates acquire related certifications, such as those for river trekking instructors, scuba divers and aquatic activity instructors. They can also participate in related workshops, such as swimming workshops and aquatic rescue workshops. By acquiring certifications or participating in workshops, they can improve the knowledge and skills regarding aquatic sports and increase their perceived behavioral control over aquatic sports. Undergraduates are encouraged to experience the physical, psychological and social benefits of participating in aquatic sports. For instance, they can go with friends and family to appropriate sites and engage in aquatic activities within their abilities. By sharing personal experience or participating in aquatic sports with friends and family, they can improve the harmonious relationships with friends and family. In so doing, undergraduates will have a more positive attitude toward aquatic sports, which in turn will increase their willingness to participate.

Suggestions for future research

As mentioned above, most of the previous studies on aquatic sports focus on a single aquatic sport or area. This study uses a questionnaire to more extensively explore undergraduates' behavioral intentions regarding their participation in aquatic sports. Given the fact that most participants in aquatic sports are young people, studies on undergraduates' behavioral intentions regarding participation in aquatic sports can serve as reference for future research and contribute to related theories. Furthermore, while the rise in venues for aquatic sports in recent years provides people in Taiwan with a different kind of choice of leisure activities, accidents related to aquatic sports have increased as well. Therefore, this study makes practical contributions by providing suggestions to aquatic sports managers based on the research results.

Given that there are sport, leisure and tourism-based aquatic activities, it is suggested that further studies be conducted on tourism-based aquatic activities. The rich island culture of Taiwan is suitable for researching aquatic tourism. Involved areas such as ecology, landscaping, industry and humanities, are all noteworthy issues. Through the exploration of these issues, studies on aquatic sports will become even sounder, with solid results.

EPILOGUE

As an island located in the subtropical region, Taiwan is surrounded by seas and has numerous lakes, rivers and reservoirs, which make it rich in aquatic sports resources. It is a pity that due to the traditional perception of aquatic sports as dangerous activities, the promotion of such sports is not thriving as much as in other countries. In fact, Taiwan has all the conditions it needs to develop aquatic sports, and relevant governmental agencies in recent years have also been vigorously promoting aquatic sports. Through participation in aquatic sports, the public can enjoy the beauty of nature and immerse themselves in the relaxing atmosphere of aquatic environments. Therefore, these sports are particularly appealing to undergraduates and other young people. This study used undergraduates as the research subjects and adopted the theory of planned behavior to construct the research model. It also used the research results to provide suggestions to aquatic sports managers and undergraduates participating in aquatic sports, as well as to future researchers.

AUTHOR INFORMATION

Cheng-Lung Wu; Associate Professor of Marine Recreation; Ed.D. in Leisure Studies, Oklahoma State University (2004); Head of the Department of Marine Sports & Recreation (2004-2006; 2014-now), National Penghu University of Science & Technology, Taiwan. R. O. C.; Member of the Taiwan Society for Sport Management; Dr. Wu's research interests include marine recreation, sports tourism, and leisure behavior. He can be reached at: jerrywu@gms.npu.edu.tw

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