Engineering Sciences
ISSN: 1308 7231 (NWSAENS)
ID: 2018.13.2.1A0408

Status : Original Study
Received: January 2018
Accepted: April 2018

Veysel Gökçek
Leyla Tavacıoğlu
İstanbul Teknik University, İstanbul-Turkey
gokcekv@itu.edu.tr; tavacioglu@itu.edu.tr

DOI	http://dx.doi.org/10.12739/NWSA.2018.13.2.1A0408	
ORCID ID	0000-0002-4841-0338	0000-0002-9919-8226
CORRESPODING AUTHOR	Leyla Tavacıoğlu	

A QUANTITATIVE ANALYSIS ON LEISURE PARTICIPATION OF TURKISH SEAFARERS BY STRUCTURAL EQUATION MODELING

ABSTRACT

Social isolation of the seafarers - which induces human factor in marine accidents - is an important problem driver in the ship environment. Emotional competencies and satisfaction with life are able to reduce effects of social isolation. Ordinary participation in leisure activities can enhance individual emotional intelligence, provide physical and mental health as well as an improved social interaction and produce life satisfaction. The aim of this study is to classify seafarers based on their leisure participation level, and to compare them each other in terms of leisure satisfaction, life satisfaction and emotional intelligence by structural equation modeling. Providing leisure facilities for seafarers and supporting them to join leisure activates as serious participants can eliminate negative effects of social isolation by enhancing the emotional intelligence and producing life satisfaction.

Keywords: Leisure, Life Satisfaction, Emotional Intelligence, Seafarers, Structural Equation Modeling

YAPISAL EŞİTLİK MODELLEMESİ İLE TÜRK GEMIADAMLARININ SERBEST ZAMAN KATILIMLARINA İLİŞKİN NİCELİKSEL BİR ANALİZ

ÖZ

Deniz kazalarında insan faktörünü tetikleyen gemiadamlarının sosyal izolasyonu, gemi ortamında önemli bir sorun oluşturmaktadır. Duygusal yetkinlikler ve hayattan duyulan memnuniyet, sosyal izolasyonun etkilerini azaltabilir. Serbest zaman faaliyetlerine katılım, bireysel duygusal zekayı artırabilir, fiziksel ve zihinsel sağlığın yanı sıra gelişmiş bir sosyal etkileşimi sağlayabilir ve yaşam memnuniyeti üretebilir. Bu çalışmanın amacı, gemiadamlarını serbest zaman katılımlarına göre sınıflandırmak ve yapısal eşitlik modellemesi ile serbest zaman tatmini, yaşam tatmini ve duygusal zeka açısından karşılaştırmaktır. Gemiadamlarına eğlence olanakları sağlanması ve ciddi olarak serbest zaman etkinliklerine katılımlarının desteklenmesi, duygusal zekalarını güçlendirerek ve yaşam memnuniyetlerini arttırarak maruz kaldıkları sosyal izolasyonun etkisini azaltabilir.

Anahtar Kelimeler: Serbest Zaman, Yaşam Tatmini, Duygusal Zeka, Denizciler, Yapısal Eşitlik Modellemesi

How to Cite:
Gökçek, V. and Tavacıoğlu, L., (2018). A Quantitative Analysis on Leisure Participation of Turkish Seafarers By Structural Equation Modeling, **Engineering Sciences (NWSAENS)**, 13(2): 137-155, DOI: 10.12739/NWSA.2018.13.2.1A0408.

1. INTRODUCTION

In modern society, people separate varied behavioral roles, that are part of their daily lives such as family life, work, recreational activities, recuperation and they appoint particular spaces for these aspects to take place in. On the other hand, the ship is a total institute; both leisure activities and work take place within the same limited area. The ship is not only workplace for seafarers, but it is also their living place for an extended period of time [1]. Social isolation is a well-known fact that every seafarer is exposed to this situation while they are on-board. They are being away from land, their family life, and their friends for many months. Day by day, crew numbers have fallen, responsibilities and paperwork have increased. Besides, seafarers have few faces for companionship, and on the top of that they come from different cultures, rigidly hierarchical ranks and speak different languages [2]. The long and short of it is that seafarers are inherently isolated from social world while they are serving on-board.

The human element is considered as a main factor contributing to incidents at sea [3]. The reason of human factor causing marine incidents and marine retentions is mostly based on social isolation and its effects on seafarers[4]. Emotions serve social and communicative functions which are coordinating social encounters by conveying information about people's thoughts and intentions [5]. So, emotional abilities are considered to be important for social interaction. Therefore, it is required to handle emotional information and dynamics intelligently to maintain the social world [6]. In other words, emotional competencies are able to break social isolation which induces human factor in marine incidents. Besides, subjective well-being and life satisfaction have been found to be negatively related to social isolation and loneliness [7]. There is correlation between life satisfaction and social life. It can be said that the happier life produces the livelier social life [8], and also more intense social life boosts more life satisfaction [9]. Moreover, it is suggested by some researchers that ordinary participation in leisure activities and positive leisure satisfaction can enhance individual emotional intelligence by cutting back personal anxiety, depression, and anger [10 and 11]. Also, leisure activities provide physical and mental health as well as an improved social interaction, psychological security, happiness and self-esteem [12]. In this point of view, leisure activities can break social isolation by improving the emotional intelligence and producing life satisfaction as well as health and well-being.

Beside of those, there has been conducted various researches to identify types of leisure such as passive/active, consumptive/non-consumptive, intellectual/physical, serious/casual or the like. One of them, serious leisure and casual leisure, has comprehensive and rich history of qualitative research that contributes to the leisure literature quantitative concept so as to validate and test existing knowledge, and is still capable of [13]. In this context, the aim of this study is to classify participants into two groups as serious leisure or casual leisure, and to compare serious and casual leisure groups each other based on leisure satisfaction, satisfactions with life and emotional abilities.

2. RESEARCH SIGNIFICANCE

In the literature, there is only one research on seafarer's leisure participation [14] and there are few research on social isolation of seafarers [2, 15 and 16]. Those studies are not intent to solve seafarers' problems, but to reveal current situation of seafarers' on-board life. To fill in this gap in the literature and solve

seafarer's social isolation and leisure participation problems, this study aims to reveal benefits of leisure participation on overcoming social isolation by improving emotional intelligence and life satisfaction. With this point of view, this research is unique in the studied field.

3. LITERATURE REVIEW

In this section, in order to suggest relevant hypothesis, establish suitable conceptual framework and find appropriate measurements, it is conducted detailed literature review on leisure participation, leisure satisfaction, life satisfaction, emotional intelligence and their relationship between each other.

3.1. Serious and Casual Leisure Participation

The concept of the serious leisure has emerged through the extensive ethnographic studies of Stebbins [17 and 19] and identified as "the systematic pursuit of an amateur, hobbyist, or volunteer core activity that is highly substantial, interesting, and fulfilling and where, in the typical case, participants find a career in acquiring and expressing a combination of its special skills, knowledge, and experience" [18]. On the other hand, casual leisure is identified as "an immediately, intrinsically rewarding, relatively short-lived pleasurable activity requiring little or no special training to enjoy it" [20]. There are few international serious leisure measurement scales in the literature [13 and 21]. Generally, most of researchers have been carried out studies to measure serious leisure participation and as stated by Stebbins (20) casual leisure participation remain as residual position in the literature. However, Akyıldız Munusturlar and Argan (22) include both casual and serious participation into her studies and develop Serious and Casual Leisure Measure (SCLM) to measure leisure participation level and to classify leisure participants into two group as serious and casual.

3.2. Leisure Satisfaction

Principal benefit of participation in leisure activities is satisfaction. According to Beard and Beard and Ragheb (23), leisure satisfaction is composed of "the positive perceptions or feelings which an individual form, elicits, or gains as a result of engaging in leisure activities and choices" (p:22). Satisfying individual needs provides participants to gain positive feelings. There are two approaches to measure leisure satisfaction; those are multiple dimensions' measurement and global measurement. Multiple dimensions [23] is to identify the source of satisfaction, global one [24] is to measure the intensity level of satisfaction. Thus, purpose of study is decisive factor to choice leisure satisfaction measurement approach. In this study, it is aimed to evaluate level of participants' leisure satisfaction to find out correlations. Therefore, global approach is more suitable than multiple dimensions for this study. There is only one leisure satisfaction measurement based on global approach for Turkish culture which is leisure satisfaction scale (LSS) developed by Akyıldız Munusturlar (25).

3.3. Life Satisfaction

Pavot and Diener (26) emphasize that "life satisfaction is a conscious cognitive judgment of one's life in which the criteria for judgment are up to the person" [26]. High score of life satisfaction provides meaningful life and sharing goals and values which are important for them. Diener, Emmons, Larsen, and Griffin (27) regard life

satisfaction as a cognitive-judgmental process. They develop a multi-item scale called as "Satisfaction with Life Scale" (SWLS) to measure globally one's own life satisfaction. The SWLS is a short instrument comprising 5-items and probably the most commonly used and cited measure for life satisfaction in scientific literature [28]. Durak, Senol-Durak, and Gencoz (29), translate SWLS into Turkish Language and examine the psychometric properties of adapted version in different Turkish samples.

3.4. Emotional Intelligence

The emotional intelligence term is expressed by Salovey and Mayer (30) as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" [30]. After the publication of the book Emotional Intelligence by Goleman (31), the emotional intelligence become popular in field of academic psychology. According to Schutte et al. (32), the most cohesive and comprehensive modes of emotional intelligence are original model of Salovey and Mayer (30) and Mayer and Salovey (33) revised model. Although, revised model emphasizes emotional development phases through being excellent process-oriented model, the original model of Salovey and Mayer (30) is able to conceptualize the various dimensions of an individual's emotional development state and comprise most dimensions of other models [32]. Thus, Schutte's Emotional Intelligence Scale (SEIS), which is self-report measure, is based on original model of EI of Salovey & Mayer.

SEIS is unique in that it is one of the few emotional intelligence tests available for public use [34]. Also, this scale is relatively brief compared with other commercial trait EI measurements, such as the Bar-On EQ-I [35] which has 133 items. However, this scale has a lack of reverse-keyed items which could potentially lead to a deviation of SEIS score [36]. Thus, Austin et al. (36) design modified version of the SEIS comprising a higher proportion of reverse-keyed items. They add eight new items in order to increase reliability of factors. Final scale has 41-items with 20 forward-keyed and 21 reverse-keyed items. This scale is also adapted to Turkish by Tatar et al [37].

3.5. Relationship between Leisure Participation, Leisure Satisfaction, Life Satisfaction, Emotional Intelligence

In literature, it is found that different leisure activities have different leisure satisfaction levels [38] and there is positive relationship between leisure participation level and leisure satisfaction [39]. Participation in leisure activities is negatively correlated with depression, anxiety and loneliness and positively associated with high life satisfaction [40]. In other words, leisure participation is predictive of better enhanced health and perceived greater life satisfaction [41]. Also, there is correlation between leisure participation and emotional intelligence [42]. Ordinary participation in leisure activities and positive leisure satisfaction can enhance individual emotional development by cutting back personal anxiety, depression, and anger [10 and 11]. Also, intense serious leisure participation can support social interactions owing to its unique characteristics [43]. There are many researches on relationship between leisure satisfaction and life satisfaction and relationship between life satisfaction and emotional intelligence. Classifying leisure participants into two groups as serious and casual is the most popular way in leisure literature [17 and 20]. Serious leisure participation supplies higher leisure satisfaction than casual leisure participation [22]. Heo, Stebbins, Kim, and Lee [44] conduct a research on relationships among serious leisure, life satisfaction, and health.

They separate leisure participation in three clusters as high/medium/low involvement groups. Results reveal that there are significant differences among the clusters on life satisfaction. Stebbins [45] indicates that both the immediate leisure experiences (casual leisure) and the long-term serious pursuits (serious leisure) are influenced by emotions, whether positive or negative. In the light of those research, hypothesizes are proposed and conceptual model of research divided into two model is established to test those relationships among seafarers as shown in Figure 1.

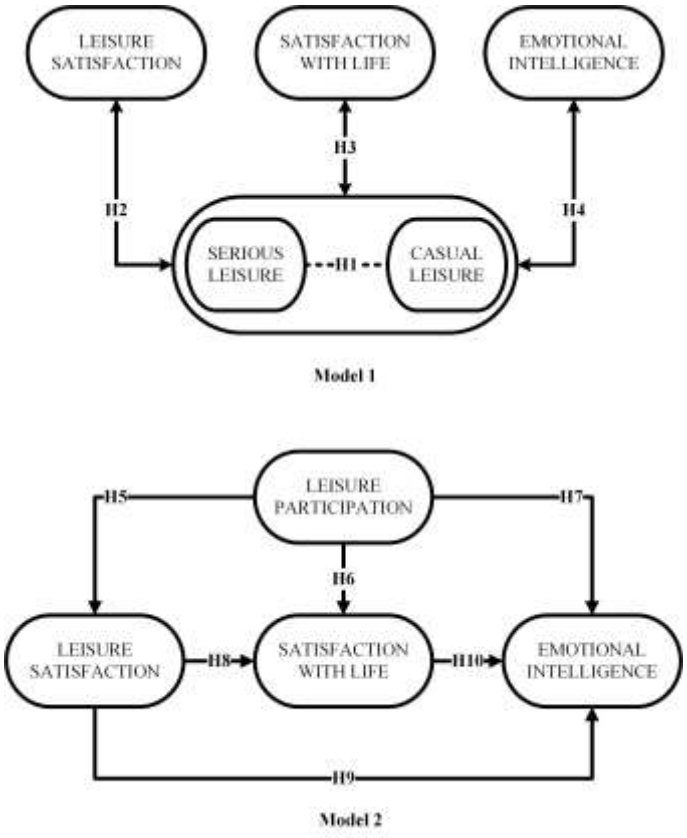

Figure 1. Conceptual models of research. Model 1 based on effects of serious and casual leisure on other variables. Model 2 based on relationships between all variables

4. METHODS

4.1. Participants

This research study targets Turkish seafarers and uses random sampling methods. Questionnaire is applied via google forms and e-mail. After excluding unfinished questionnaires, research sample reach 217 Turkish seafarers from different levels of competency; 6.5% Master, 54.0% Deck officer, 21.0% Engine officer, 12.5% Crew, 6.0% catering crew. Participants have mostly 5-10 years' experience. Our sample consists of 23 female and 194 male seafarers and 169 of them are single while 48 of them are married. They are working on different types of ship such as Tanker (44.7%), Dry Bulk Carrier (31.8%), Container (14.3%) and other (9.6%).

4.2. The Instruments

Data has been collected by Likert type scales which are SCLM, LSS, SWLS and SEIS. Fitness of data set is analysed in order to identify psychometric qualities of scales for this research sample. In this

context, missing values and outliers are defined and multicollinearity, singularity and normality tests are conducted. A visual inspection of histograms, normal q-q plots and box plots shows that all scales are approximately normally distributed and Shapiro-Wilk's test p values are more than .05 as shown in the Table 1. In terms of reliability, all scales have adequate internal consistency coefficients (α>.80).

Table 1. Descriptive items for SCLM, LSS, SWLS and SEIS

Variables[a]	μ	σ^2	σ	Skewness	Kurtosis	Shapiro-Wilk Sig.
Career[b]	3.32	.477	.691	-.046(.165)	-.423(.329)	.357*
Competence[b]	2.98	.743	.862	.067(.165)	-.321(.329)	.052*
Psycho-social[b]	3.20	.472	.687	.063(.165)	-.431(.329)	.365*
Therapeutic[b]	3.50	.450	.670	.087(.165)	-.399(.329)	.055*
Unique ethos[b]	3.32	.374	.612	.038(.165)	-.090(.329)	.075*
Identity[b]	2.97	.652	.807	.033(.165)	-.404(.329)	.089*
Personality[b]	3.73	.298	.546	-.021(.165)	-.334(.329)	.122*
Perseverance[b]	3.17	.554	.744	.072(.165)	-.165(.329)	.460*
Effort[b]	3.11	.618	.786	.026(.165)	-.320(.329)	.195*
LSS[c]	3.98	1.721	1.312	-.107(.165)	-.478(.329)	.069*
SWLS[d]	3.35	.410	.640	-.035(165)	-.294(329)	.274*
SEIS[e]	152.75	209.46	14.47	-.114(165)	-.140(329)	.060*

*p>.05
[a]N=217. All displayed variables had no missing value
[b]=Factors of SCLM
LSS[c]=Leisure Satisfaction Scale
SWLS[d]=Satisfaction with Life Scale
SEIS[e]=Revised Schutte's Emotional Intelligence Scale

4.3. Procedure

In order to test first model of conceptual framework, cluster analysis is conducted to classify seafarer leisure participants based on each factors of SCLM. After cluster analysis, discriminant analysis is applied to find out whether factors' discriminant powers are significant and valid or not [46]. Also it is to evaluate importance level of factors gathered from SCLM and to identify which factors make a better distinction between clusters. Difference between clusters is identified by crosstabs including leisure satisfaction, life satisfaction and emotional intelligence scores and chi-square analysis is utilized to recognize whether results are statistically significant. Structural Equation Model (SEM) with Maximum Likelihood (ML) method is used to test second model to break social isolation of seafarers via improving emotional intelligence and boosting life satisfaction by participation in leisure activities. It is aimed to examine regression and path coefficients between latent factors and observed variables in accordance with established conceptual model.

5. FINDINGS AND DISCUSSIONS

5.1. Cluster Analysis

In this research it is decided to use the best cluster algorithm which is Fuzzy C-means method to determine clusters [47]. Before applying Fuzzy C-means cluster analysis, number of clusters should be defined. For this purpose, "NbClust package" [48] is utilized in latest version of R Studio. Euclidean distance measurement based on square distance is selected and Ward and K-means aggregation methods are employed and interpreted together. Output of NbClust is shown in Table 2, Also, Hubert and D indexes which are graphical method of determining the number of clusters are presented in Figure 2. In the plot of those indexes, algorithm seeks a significant knee that corresponds to a

significant increase of the value of the measure. According to those results, the best number of clusters is found as two.

Table 2. Output of Nblcuster based on both K-means and Ward methods

K-means	Ward
11 proposed 2 as the best number of clusters 7 proposed 3 as the best number of clusters 1 proposed 4 as the best number of clusters 1 proposed 6 as the best number of clusters 1 proposed 7 as the best number of clusters 1 proposed 8 as the best number of clusters 2 proposed 10 as the best number of clusters	12 proposed 2 as the best number of clusters 6 proposed 3 as the best number of clusters 1 proposed 5 as the best number of clusters 1 proposed 6 as the best number of clusters 2 proposed 7 as the best number of clusters 1 proposed 10 as the best number of clusters
Note: According to the majority rule, the best number of clusters is 2	

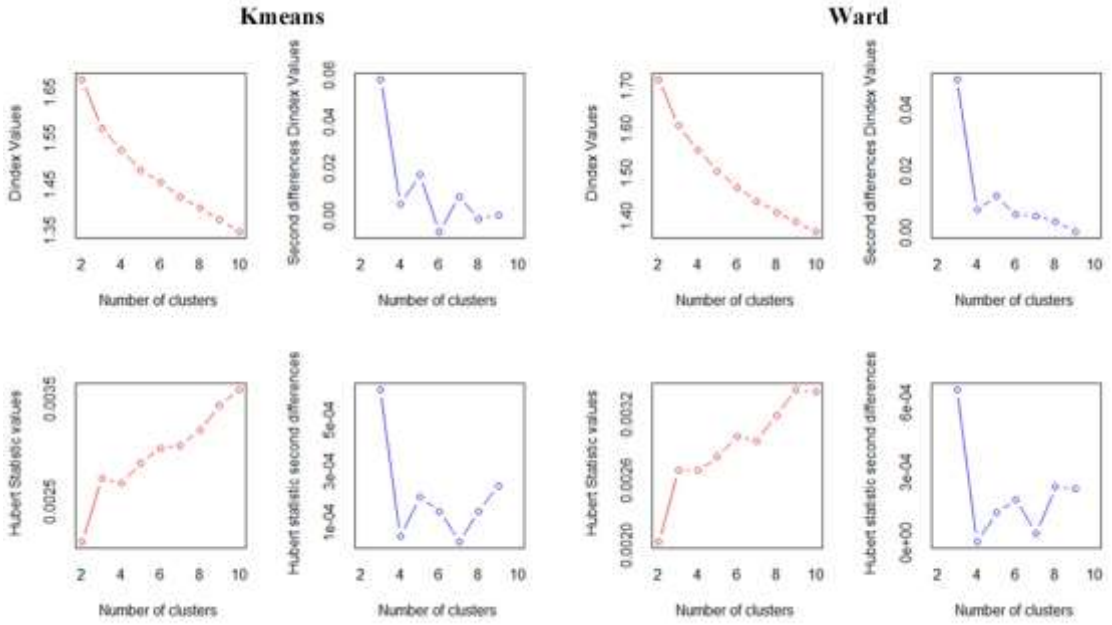

Figure 2. Output of Hubert & D indexes based on Kmeans and Ward methods

After determining best number of clusters as two, Fuzzy C-Means (FCM) algorithm developed by Dunn (49) and improved by Bezdek (50) is conducted by "cmeans" command in "e1071 package" [51] in R studio to situate participants into one of those two group. Eucliden distance measure based on the mean square error is employed. The results of clusters' sizes and centers are shown in Table 3. Membership values of data points are presented as 3d Plots by "scatterplot3d package" [52] in R studio shown in Figure 3. One can easily infer that centers of cluster 1 are more than centers of cluster 2. It means that cluster 1 refers to "serious leisure participation" and cluster 2 refers to "casual leisure participation". There are 108 serious and 109 casual leisure participants according to results of FCM cluster analysis.

Table 3. Results of FCM cluster analysis

Independent Variables	Clusters		Sig.
	1 (serious)	2 (casual)	
Career[a]	3.68	2.95	.000***
Competence[a]	3.46	2.51	.000***
Psycho Social[a]	3.58	2.85	.000***
Therapeutic[a]	3.80	3.22	.000***
Unique ethos[a]	3.57	3.07	.000***
Identity [a]	3.41	2.57	.000***
Personality[a]	3.94	3.52	.000***
Perseverance[a]	3.58	2.78	.000***
Effort[a]	3.53	2.71	.000***
Count	108	109	.000***
%	49.77	50.33	

***p<.001 [a]=Factors of SCLM

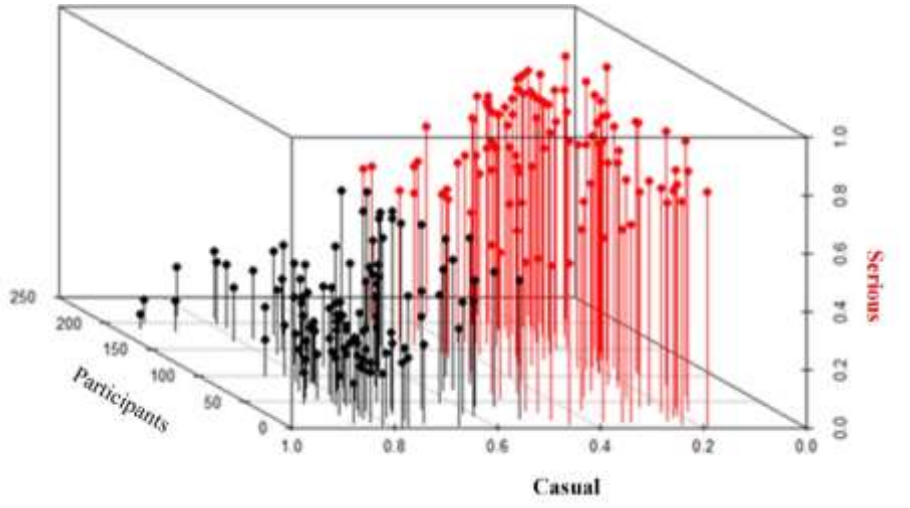

Figure 3. 3D plot of cluster memberships of participants. Black dots refer to casual participants, while red dots refer to serious participants

As a result of cluster analysis, the alternative hypothesis H1 which refers to significant difference between serious leisure and casual leisure groups is found to be acceptable at the level of .001. It means that seafarers can be classified into two group as "serious leisure participant" and "casual leisure participant" based on their levels of leisure participation defined by SCLM.

5.1. Discriminant Analysis

Discriminant function analysis is practical for determining whether a group of variables is efficient in expecting category membership [46]. 9 factors of SCLM are assigned as independent variables for this discriminant analysis. Independent variables are normal for each level of the grouping variable with acceptable level of skewness and kurtosis [53]. Homogeneity of covariance is tested with Box's M statistic [46]. It is observed that results of Box-M statistic are not significant (p>.05) and it means that covariance matrices are equal and there is homogeneity of covariance matrices. Besides, it is observed that inter correlations between all variables for each factor is less than .90 and accordingly, there is no any multicollinearity issue for all independent variables. After assumption of discriminant analysis are

satisfied, linear discriminant analysis is utilized to predict a categorical dependent variable (clusters) by independent variables (factors of SCLM). Canonical correlation, eigenvalue, Wilk's Lambda and Chi-square are evaluated to identify significance of linear discriminant function. Eigenvalue of this function (2.385) explains %100 of cumulative variance and provides good discrimination. Square of canonical correlation value (.84) shows that this model explains % 71 of variance of dependent variable and there is high relationship between discriminant function and grouping variable. Wilks's Lambda value is found as .294 and accordingly Chi-square value is found as 256.66. Discriminant function is significant at the p level of .001 and comments and predictions on results can be made.

After determining validity of discriminant function, relationship between clusters (dependent variable) and factors (independent variables) are evaluated. Also, standardized canonical discriminant function coefficients and discriminant loadings of each factors in structure matrix are essential to assess importance of independent variables. As shown in Tables 4, "Sense of Competence" has the highest discriminant function coefficient and it is the most powerful variable that separates the two groups from one another. However, "Personality congruence" has the lowest discriminant function coefficient and it is the weakest variable that separates the two groups from one another. Discriminant loadings in structure matrix show relationship between each independent variables and discriminant function. It is considered that variables which have discriminant loadings above of .30 are valid, below of 0.30 are invalid. All this information shows that all factor loadings are above of .30 and discriminant power of all of them has significant and valid.

Table 4. Importance of independent variables (factors)

Independent Variables	SCDFC[b]	DL[c]
Career[a]	.054	.45
Competence[a]	.469	.55
Psycho Social[a]	.040	.46
Therapeutic[a]	.295	.41
Unique Ethos[a]	.297	.37
Identity[a]	.208	.46
Personality[a]	.003	.30
Perseverance[a]	.382	.58
Effort[a]	.314	.50

[a]=Factors of SCLM
SCDFC[b]=Standardized Canonical Discriminant Function Coefficients
DL[c]=Discriminant Loadings

5.2. Crosstabs

Crosstabs are utilized to display comparison between casual and serious leisure participants depend on all variables' scores. Chi-square statistic is applied for each comparison to test significance of analysis. Findings are as shown in Table 5.

It is found that clusters of leisure participants are significantly distinct from one another based on their level of leisure satisfaction, satisfaction with life and emotional intelligence ($p<.01$). Therefore, H2, H3, H4 is found to be acceptable at the level of .001. First of all, for both SL and CL clusters, participants are mostly doing leisure activities several times a week (46.5%). When considering leisure satisfaction, emotional intelligence and life satisfaction, it is revealed that there is statically significant difference between clusters and those variables. While majority of SL participants has very

high level leisure satisfaction (41.7%), very high level emotional intelligence (29.6%) and very high level life satisfaction (%30.6), majority of CL participants has low level leisure satisfaction (37.6%), very low level emotional intelligence (33.0%) and low level life satisfaction (28.4%).

Table 5. Relationships related to clusters

Variables			Participants		Total	χ^2 (p)
			Serious	Casual		
LSS[a]	Very Low	Count	4	39	43	92.240 (.000)***
		%	3.7%	35.8%	19.8%	
	Low	Count	9	41	50	
		%	8.3%	37.6%	23.0%	
	Medium	Count	20	15	35	
		%	18.5%	13.8%	16.1%	
	High	Count	30	8	38	
		%	27.8%	7.3%	17.5%	
	Very High	Count	45	6	51	
		%	41.7%	5.5%	23.5%	
SWLS[b]	Very Low	Count	17	26	43	25.888 (.000)***
		%	15.7%	23.9%	19.8%	
	Low	Count	13	31	44	
		%	12.0%	28.4%	20.3%	
	Medium	Count	19	27	46	
		%	17.6%	24.8%	21.2%	
	High	Count	26	15	41	
		%	24.1%	13.8%	18.9%	
	Very High	Count	33	10	43	
		%	30.6%	9.2%	19.8%	
SEIS[c]	Very Low	Count	7	36	43	55.618 (.000)***
		%	6.5%	33.0%	19.8%	
	Low	Count	12	34	46	
		%	11.1%	31.2%	21.2%	
	Medium	Count	28	22	50	
		%	25.9%	20.2%	23.0%	
	High	Count	29	8	37	
		%	26.9%	7.3%	17.1%	
	Very High	Count	32	9	41	
		%	29.6%	8.3%	18.9%	
Total		Count	108	109	217	
		%	100.0%	100.0%	100.0%	

***p<.001
LSS[a]=Leisure Satisfaction Scale
SWLS[b]=Satisfaction with Life Scale
SEIS[c]=Revised Schutte's Emotional Intelligence Scale

5.3. Test of Conceptual Model by SEM

If the research's data meet all the requirement of parametric assumptions, the finding will be meaningful by using the Covariance Based Structural Equation Modeling (CB-SEM) rather than Variance Based Structural Equation Modeling [54]. All parametric assumptions are satisfied for each variables of conceptual model. Therefore, CB-SEM is developed to test relationships between level of leisure participation, leisure satisfaction, emotional intelligence and life satisfaction. Proposed model is tested with Maximum Likelihood (ML) estimation method.

In this established SEM, serious and casual leisure participation is assigned as latent exogenous variable; leisure satisfaction and life satisfaction are assigned as latent endogenous variable; emotional intelligence (sum of SEIS) is assigned as observed endogenous variable.

Residual error terms are included for each endogenous variable in order to treat disturbance of them as latent variables. Chi-square to df ratio (χ2/df), RMSEA, NFI, CFI, GFI, TLI model fit indices are used to evaluate model fit of established SEM. SCLM is called reflective construct since it predicts those observed variables namely "Leisure career", "Sense of competence", "Psycho-social benefits", "Therapeutic benefits", "Unique ethos", "Identity", "Personality congruence", "Perseverance" and "Personal effort". This exogenous latent construct is a predictor of LSS, SWLS and SEIS.

LSS is second order latent construct since it is measured using five items. This endogenous latent variable predicted by SCLM is formative construct for SWLS and SEIS. On the other hand, SWLS is also second order construct since it is measured using five items. SWLS predicted by SCLM and LSS is assigned as formative construct of SEIS. Finally, SEIS is an observed variable called sometimes as a directly measured variable. This observed variable is formed (predicted) by SCLM and LSS and SWLS. Hypotheses proposed in second conceptual model are can be explained in SEM as follows: hypotheses H5, H6 and H7 are testing for casual effects and hypotheses H8 and H9 are intended to test the mediation effects, while another hypothesis namely H10 is testing the moderation effect in the model. Before testing of conceptual model, bivariate correlations with Pearson correlation coefficients between all variables are utilized. Results of correlation are presented in Table 6.

Table 6. Correlation between all variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. Career[a]	1											
2. Competence[a]	.534	1										
3. Psycho-Social[a]	.570	.510	1									
4. Therapeutic[a]	.406	.322	.471	1								
5. Unique Ethos[a]	.335	.264	.438	.356	1							
6. Identity[a]	.476	.468	.531	.304	.322	1						
7. Personality[a]	.345	.373	.347	.451	.275	.322	1					
8. Perseverance[a]	.500	.496	.493	.381	.373	.546	.345	1				
9. Effort[a]	.479	.410	.435	.444	.361	.442	.330	.471	1			
10. LSS[b]	.457	.425	.478	.614	.482	.411	.539	.511	.548	1		
11. SWLS[c]	.195	.253	.258	.126	.214	.357	.257	.361	.264	.399	1	
12. SEIS[d]	.309	.407	.314	.343	.209	.339	.325	.475	.396	.550	.510	1

Note:All correlations is significant at the .01 level (2-tailed)
[a]=Factors of SCLM
LSS[b]=Leisure Satisfaction Scale
SWLS[c]=Satisfaction with Life Scale
SEIS[d]=Revised Schutte's Emotional Intelligence Scale

There are statistical significant correlations between all variables. All correlations are positive direction. There is a large correlation between seafarers' leisure satisfaction and seafarers' emotional intelligence (.55) and there is a medium correlation with seafarers' satisfaction with life (.40). Besides, there is also large correlation between seafarers' satisfaction with life and seafarers' emotional intelligence (.51). While leisure satisfaction has medium and large correlations with factors of SCLM, life satisfaction has small and medium correlations with them. Also, emotional intelligence has medium and large correlations with those factors. Those results provide support to established conceptual model of research. After correlation analysis, CB-SEM is conducted with ML estimation method. Path coefficients and regression loads related to tested conceptual model is presented in Figure 4 and z values of variables are given in Table 7.

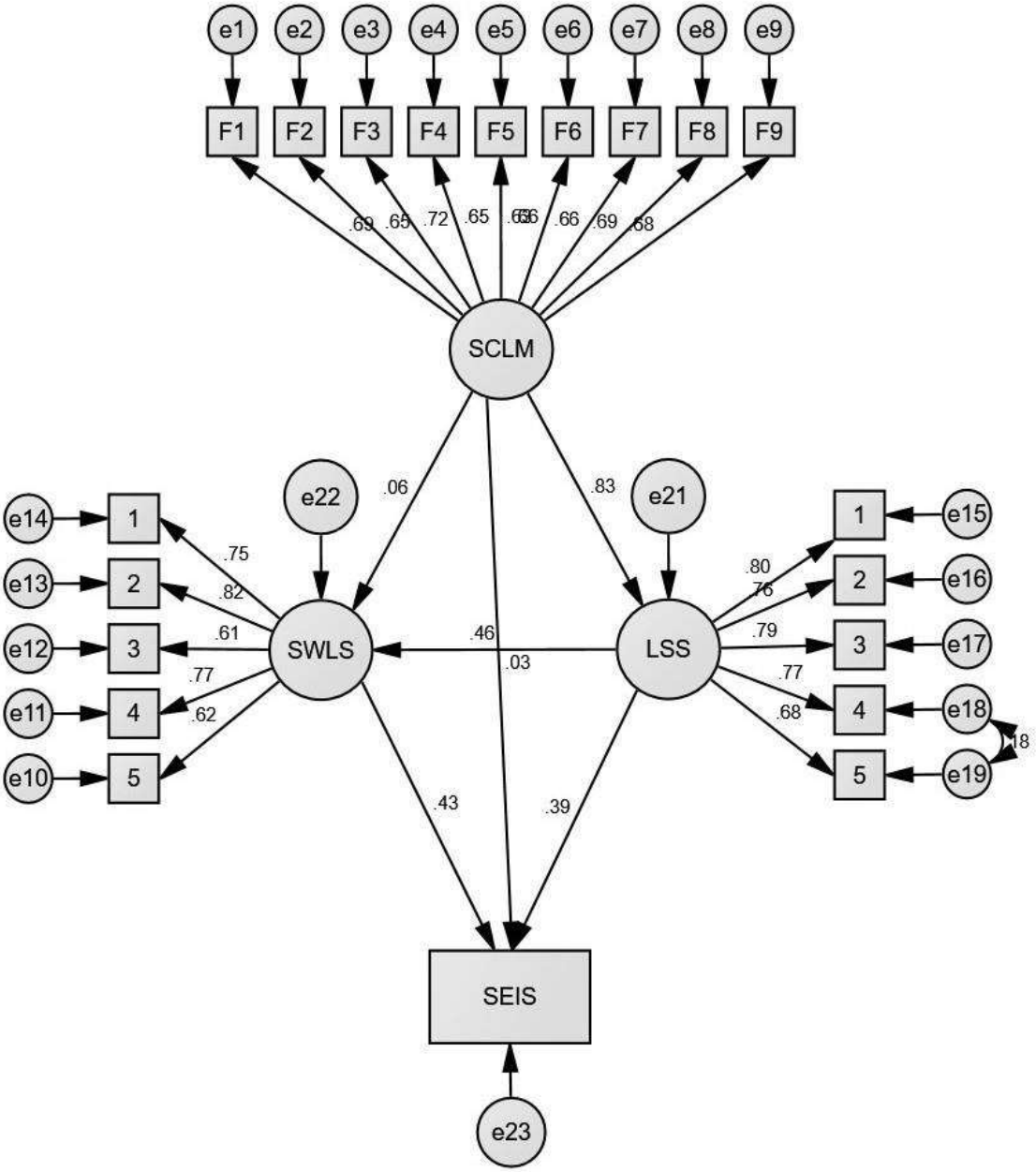

Figure 4. Path Coefficients of Conceptual Model. Relationship between leisure participation, life satisfaction, satisfaction with life and emotional intelligence

Table 7. Regression weights and their critical ratios of SEM

Dependent		Independent	Estimate	S.E.	C.R.	P	Stnd.
LSS	←	SCLM	.731	.081	9.010	.000***	.829
SWLS	←	LSS	.639	.236	2.709	.007**	.457
SWLS	←	SCLM	.078	.201	.389	.697	.063
Career	←	SCLM	.972	.101	9.630	.000***	.694
Competence	←	SCLM	1.133	.126	8.994	.000***	.648
Psycho Social	←	SCLM	1.000				.718
Therapeutic	←	SCLM	.886	.099	8.982	.000***	.651
Unique Ethos	←	SCLM	.660	.089	7.385	.000***	.632
Identity	←	SCLM	1.081	.119	9.052	.000***	.662
Personality	←	SCLM	.616	.080	7.726	.000***	.656
Perseverance	←	SCLM	1.040	.110	9.490	.000***	.689
Effort	←	SCLM	1.080	.115	9.395	.000***	.677
SWLS_5	←	SWLS	.989	.109	9.091	.000***	.615
SWLS_4	←	SWLS	.981	.084	11.736	.000***	.766
SWLS_3	←	SWLS	.842	.093	9.033	.000***	.612
SWLS_2	←	SWLS	1.000				.817
SWLS_1	←	SWLS	.958	.084	11.462	.000***	.750
LSS_2	←	LSS	1.000				.756
LSS_3	←	LSS	1.041	.070	14.972	.000***	.790
LSS_4	←	LSS	1.235	.113	10.892	.000***	.769
LSS_5	←	LSS	1.219	.128	9.532	.000***	.680
LSS_1	←	LSS	.965	.070	13.703	.000***	.796
SEIS	←	SWLS	.248	.040	6.252	.000***	.427
SEIS	←	LSS	.318	.107	2.966	.003**	.392
SEIS	←	SCLM	.018	.087	.211	.833	.026

**The probability of getting critical ratio in absolute value is less than 0.01
***The probability of getting critical ratio in absolute value is less than 0.001
Stnd.: Standardized

As a result of SEM analysis, relation between SCLM and SWLS and SEIS have no statistically significant critical ratio value (z value). Accordingly, paths which has insignificant z values should be excluded from SEM. Therefore paths between SCLM→SWLS and SCLM→SEIS are removed and SEM is re-established. Critical ratios for all other regression weights are acceptable at the 0.001 level [55]. Path coefficients and regression loads related to re-established conceptual model is presented in Figure 5 and z values of variables are given in Table 8.

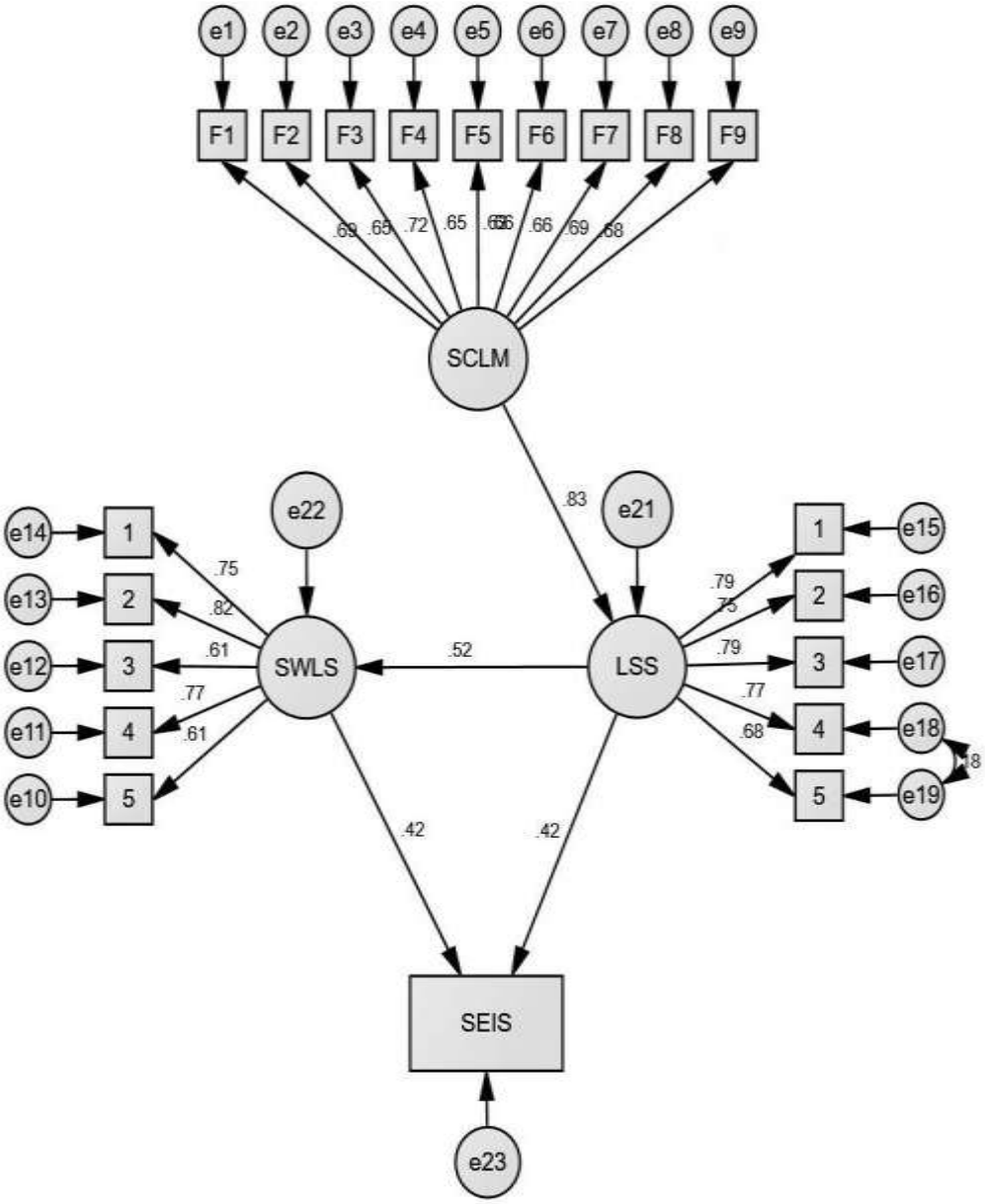

Figure 5. Re-Established Path Coefficients of Conceptual Model. Relationship between leisure participation, life satisfaction, satisfaction with life and emotional intelligence

Results of re-established SEM analysis is showed that critical ratios for all other regression weights are acceptable at the 0.001 level. This model is tested with model fit indices. χ^2/df value for SEM is found as 1.641 (χ^2=265.818, df=162) and it refers to perfect model [53]. Besides, absolute fit indices (RMSEA, GFI) and relative fit indices (CFI, NFI, TLI) values suggest a good model fit. Results of indices are shown in Table 9. According to path coefficients and z values, H6 which is relationship between leisure participation and life satisfaction and H7 which is relationship between leisure participation and emotional intelligence are not acceptable (p>.05). H5, H8, H9, H10 are found acceptable at the level of 0.001. All acceptable hypothesizes of whole conceptual model are shown in Figure 6.

Table 8. Regression weights and their critical ratios of re-established SEM

Dependent		Independent	Estimate	S.E.	C.R.	P	Stnd.
LSS	←	SCLM	.732	.081	9.043	.000***	.833
SWLS	←	LSS	.722	.113	6.377	.000***	.515
Career	←	SCLM	.973	.101	9.624	.000***	.694
Competence	←	SCLM	1.132	.126	8.977	.000***	.647
Psycho Social	←	SCLM	1.000				.717
Therapeutic	←	SCLM	.889	.099	9.002	.000***	.653
Unique Ethos	←	SCLM	.661	.089	7.393	.000***	.632
Identity	←	SCLM	1.080	.120	9.033	.000***	.661
Personality	←	SCLM	.618	.080	7.735	.000***	.657
Perseverance	←	SCLM	1.038	.110	9.463	.000***	.687
Effort	←	SCLM	1.081	.115	9.392	.000***	.677
SWLS_5	←	SWLS	.989	.109	9.081	.000***	.615
SWLS_4	←	SWLS	.982	.084	11.743	.000***	.767
SWLS_3	←	SWLS	.843	.093	9.034	.000***	.612
SWLS_2	←	SWLS	1.000				.817
SWLS_1	←	SWLS	.958	.084	11.453	.000***	.750
LSS_2	←	LSS	1.000				.754
LSS_3	←	LSS	1.041	.070	14.959	.000***	.787
LSS_4	←	LSS	1.237	.114	10.882	.000***	.768
LSS_5	←	LSS	1.224	.128	9.549	.000***	.681
LSS_1	←	LSS	.966	.071	13.695	.000***	.795
SEIS	←	SWLS	.246	.040	6.213	.000***	.423
SEIS	←	LSS	.340	.056	6.031	.000***	.417

***The probability of getting critical ratio in absolute value is less than 0.001
Stnd.: Standardized

Table 9. Descriptive items of model fit indices of SEM

Index	Good fit	Sample Statistic	Rationale
χ^2/df	$0 \leq \chi^2/df \leq 5$	1.632	Wheaton, Muthen, Alwin, and Summers [56]
RMSEA	0≤RMSEA≤.07	.054	Steiger [57]
NFI	.90≤NFI≤1.00	.90	Steiger [57]
CFI	.90≤CFI≤1.00	.95	Steiger [57]
GFI	.90≤GFI≤1.00	.90	Hooper, Coughlan, and Mullen [58]
TLI	.90≤TLI≤1.00	.95	Hu and Bentler [59]

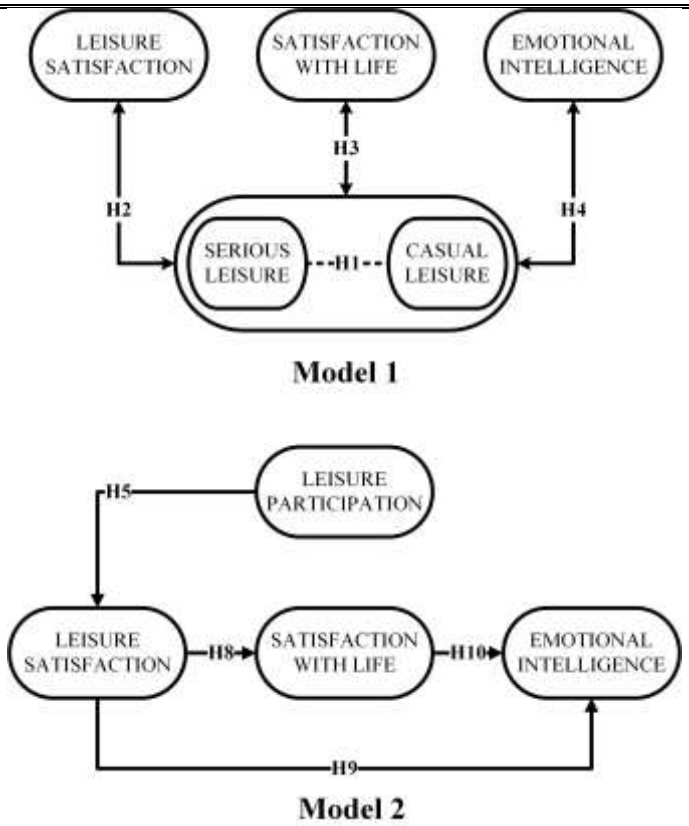

Figure 6. Acceptable Hypotheses of Conceptual Model. Model 1 based on effects of serious and casual leisure on other variables. Model 2 based on relationships between all variables

6. CONCLUSIONS

The results show that leisure participants can be divided into two groups as a serious and casual. Serious leisure participants have more leisure satisfaction, life satisfaction and emotional intelligence than causal ones. Besides, as a result of SEM, one can conclude that high level of leisure participation of seafarers is correlated with a positive attitude toward leisure satisfaction and it produces more satisfaction with life and more emotional intelligence. Also, there is directly positive relationship between life satisfaction and emotional intelligence. The greater life satisfaction is a sign of improved emotional intelligence. Furthermore, there has been conducted many studies that show positive relation between work performance and emotional intelligence [60 and 62]. In addition, high level of satisfaction with life refers to meaningful life, well-being and brings out work performance [27 and 63]. In this point of view, proper using of recreational facilities provided on-board boosts seafarers' leisure satisfaction, so it enhances emotional intelligence and boosts satisfaction with life, and accordingly promotes motivation and work performance as well as health and well-being. Besides, providing decent accommodation and suitable recreational facilities offers also lots of benefits from the perspective of the company [64]. As Progoulaki and Roe has advised that "a competent, rested and well-motivated crew is an essential factor in reducing operational costs by increasing efficiency, safe operations and protecting the owner's investment in expensive vessels and equipment" [65]. By considering all steps, one can easily obtain that there is a lot of benefits of leisure time activities for both seafarers and maritime companies. As a result of all findings,

providing leisure facilities both on-board and onshore for seafarers, and supporting and encouraging them to join leisure time activates as a serious participant can boosts the emotional intelligence and life satisfaction, breaks social isolation, promotes motivation and work performance as well as health and well-being, increases efficiency and operational safety and protects owner's investment by reducing operational costs.

REFERENCES

[1] Fernandez, B. and Krootjes, R., (2007). Seafarers-Invisible part of the Filipino Diaspora in Europe: Scenarios from on-board Research. In F.M. Høgsholm (Ed.), In de olde worlde: Views of Filipino Migrants in Europe (pp. 58-82): Philippine Social Science Council.

[2] Swift, O., (2015). Social Isolation of Seafarers. Retrieved January 3, 2016, from ISWAN http://seafarerswelfare.org/news-and-media/latest-news/tweet-chat-iswan-hosts-discussion-about-social-isolation-of-seafarers

[3] Hetherington, C., Flin, R., and Mearns, K., (2006). Safety in Shipping: The Human Element. Journal of Safety Research, 37(4), 401-411.

[4] Sampson, H. and Thomas, M., (2002). The Social Isolation of Seafarers: Causes, Effects, and Remedies. International Maritime Health, 54(1-4), 58-67.

[5] Keltner, D. and Haidt, J., (2001). Social Functions of Emotions. in T.J. Mayne and G.A. Bonanno (Eds.), Emotions: Current Issues and Future Directions (pp:192-213). New York: Guilford.

[6] Lopes, P.N., Brackett, M.A., Nezlek, J.B., Schütz, A., Sellin, I., and Salovey, P., (2004). Emotional Intelligence and Social Interaction. Personality and Social Psychology Bulletin, 30(8), 1018-1034.

[7] Buelga, S., Musitu, G., Murgui, S., and Pons, J., (2008). Reputation, loneliness, Satisfaction with Life and Aggressive Behavior in Adolescence. The Spanish Journal of Psychology, 11(01), 192-200.

[8] Becchetti, L., Pelloni, A., and Rossetti, F., (2008). Relational Goods, Sociability, and Happiness. Kyklos, 61(3), 343-363.

[9] Sarracino, F. (2010). Social Capital and Subjective Well-Being Trends: Comparing 11 Western European Countries. The Journal of Socio-Economics, 39(4), 482-517.

[10] Dumazedier, J. and McClure, S.E., (1967). Toward a Society of leisure: Free Press New York.

[11] Rojek, C., (2010). Leisure and Emotional Intelligence. World Leisure Journal, 52(4), 240-252.

[12] Iso-Ahola, S.E., and Mannell, R.C., (2004). Leisure and Health. Work and Leisure, 184-199.

[13] Gould, J., Moore, D., Karlin, N.J., Gaede, D.B., Walker, J., and Dotterweich, A.R., (2011). Measuring Serious Leisure in Chess: Model Confirmation and Method Bias. Leisure Sciences, 33(4), 332-340.

[14] Saarni, H., and Pentti, J., (1996). Free-time Activities among Seafarers on Board Finnish Cargo Ships. Bulletin of the Institute of Maritime and Tropical Medicine in Gdynia, 47(1-4), 33-43.

[15] Sampson, H. and Thomas, M., (2003). The Social Isolation of Seafarers: Causes, Effects, And Remedies. International Maritime Health, 54(1-4), 58-67.

[16] Jensen, B., (2002). The Isolated Seafarer. Educational for occupational health nurse (WMU Library, unpublished).

[17] Stebbins, R.A., (1982). Serious Leisure a Conceptual Statement. Sociological Perspectives, 25(2), 251-272.
[18] Stebbins, R.A., (1992). Amateurs, Professionals, and Serious Leisure: McGill-Queen's Press-MQUP.
[19] Stebbins, R.A., (1996). Casual and Serious Leisure and Post-Traditional thought in the Information Age. World Leisure & Recreation, 38(3), 4-11.
[20] Stebbins, R.A., (1997). Casual Leisure: A Conceptual Statement. Leisure studies, 16(1), 17-25.
[21] Tsaur, S.H. and Liang, Y.W., (2008). Serious Leisure and Recreation Specialization. Leisure Sciences, 30(4), 325-341.
[22] Akyıldız Munusturlar, M. and Argan, M., (2016). Development of the Serious and Casual Leisure Measure. World Leisure Journal, 58(2), 124-141.
[23] Beard, J.G. and Ragheb, M.G., (1980). Measuring Leisure Satisfaction. Journal of Leisure Research, 12(1), 20.
[24] Vaske, J.J., Fedler, A.J., and Graefe, A.R., (1986). Multiple Determinants of Satisfaction from a Specific Waterfowl Hunting Trip. Leisure Sciences, 8(2), 149-166.
[25] Akyıldız Munusturlar, M., (2013). Ciddi ve Kayıtsız Katılımcıların Kişilik Özellikeri İle Boş Zaman Tatmini ve Yaşam Tatmini Arasındaki Ilişki (Doctoral Dissertation), Anadolu Üniversitesi, Eskişehir. Retrieved From. https://tez.yok.gov.tr/UlusalTezMerkezi/TezGoster?key=1zw6GvYMe-q3Hf6HR-3US-puIk0mZ-gdkuGb38UDFJtUFofOJBxf_Q4_ae0O90TG.
[26] Pavot, W., and Diener, E. (1993). Review of the Satisfaction with Life Scale. Psychological Assessment, 5(2), 164.
[27] Diener, E., Emmons, R.A., Larsen, R.J., and Griffin, S., (1985). The Satisfaction with Life Scale. Journal of Personality Assessment, 49(1), 71-75.
[28] Diener, E. and Gonzalez, E., (2011). The Validity of Life Satisfaction Measures. Psychological Assessment, 5(2), 164.
[29] Durak, M., Senol-Durak, E., and Gencoz, T., (2010). Psychometric Properties of the Satisfaction with Life Scale among Turkish University Students, Correctional Officers, And Elderly Adults. Social Indicators Research, 99(3), 413-429.
[30] Salovey, P. and Mayer, J.D., (1990). Emotional Intelligence. Imagination, Cognition and Personality, 9(3), 185-211.
[31] Goleman, D.P., (1995). Emotional Intelligence: Why it can Matter more than IQ for Character, Health and Lifelong Achievement. In: New York: Bantam Books.
[32] Schutte, N.S., Malouff, J.M., Hall, L.E., Haggerty, D.J., Cooper, J.T., Golden, C.J., and Dornheim, L., (1998). Development and Validation of a Measure of Emotional Intelligence. Personality and Individual Differences, 25(2), 167-177.
[33] Mayer, J.D., and Salovey, P., (1997). What is Emotional Intelligence? . In P. Salovey and D. Sluyter (Eds.), Emotional Development and Emotional Intelligence: Educational Implications (pp. 3-31). New York: Basic Books.
[34] Van Rooy, D.L. and Viswesvaran, C., (2007). Assessing Emotional Intelligence in Adults: A Review of The Most Popular Measures. Educating people to be Emotionally Intelligent, 259-272.
[35] Bar-On, R., (1997). The Emotional Quotient Inventory (EQ-i): A Test of Emotional Intelligence Multi Health Systems: Toronto.
[36] Austin, E.J., Saklofske, D.H., Huang, S.H., and McKenney, D., (2004). Measurement of Trait Emotional Intelligence: Testing and Cross-validating a Modified Version of Schutte et al.'s (1998) Measure. Personality and Individual Differences, 36(3), 555-562.

[37] Tatar, A., Tok, S., and Saltukoğlu, G., (2011). Adaptation of the Revised Schutte Emotional Intelligence Scale into Turkish and Examination of Its Psychometric Properties. Klinik Psikofarmakoloji Bulteni-Bulletin Of Clinical Psychopharmacology, 21(4), 325-338.
[38] Chen, Y.C., Li, R.H., and Chen, S.H., (2013). Relationships among Adolescents' Leisure Motivation, Leisure Involvement, and Leisure Satisfaction: A Structural Equation Model. Social Indicators Research, 110(3), 1187-1199.
[39] Walker, G.J., Halpenny, E., Spiers, A., and Deng, J., (2011). A Prospective Panel Study of Chinese-Canadian Immigrants' Leisure Participation and Leisure Satisfaction. Leisure Sciences, 33(5), 349-365.
[40] Huebner, E.S., Suldo, S.M., Smith, L.C., and McKnight, C.G., (2004). Life Satisfaction in Children and Youth: Empirical Foundations and Implications for School Psychologists. Psychology in the Schools, 41(1), 81-93.
[41] Menec, V.H. and Chipperfield, J.G., (1997). Remaining Active in Later Life the Role of Locus of Control in Seniors' Leisure Activity Participation, Health, and Life Satisfaction. Journal of Aging and Health, 9(1), 105-125.
[42] Wu, C.H., (2010). The Relationships among Leisure Participation, Leisure Satisfaction, and Emotional Intelligence among Elementary School Teachers in Northern Taiwan. (Doctoral Dissertation), The University of the Incarnate Word, Available from ProQuest Dissertations & Theses Global. (305247436). Retrieved from http://160.75.22.2/docview/305247436?accountid=11638.
[43] Stebbins, R.A., (2005). Project-based Leisure: Theoretical Neglect of a Common use of Free Time. Leisure Studies, 24(1), 1-11.
[44] Heo, J., Stebbins, R.A., Kim, J., and Lee, I., (2013). Serious Leisure, life Satisfaction, and Health of Older Adults. Leisure Sciences, 35(1), 16-32.
[45] Stebbins, R.A., (2014). The Emotions in Leisure: Positive and Negative Influences. Retrieved March 20, 2016 https://leisurestudiesblog.wordpress.com/2014/11/09/the-emotions-in-leisure-positive-and-negative-influences/.
[46] Green, S.B. and Salkind, N.J., (2010). Using SPSS for Windows and Macintosh: Analyzing and Understanding Data: Prentice Hall Press.
[47] Mingoti, S.A. and Lima, J.O., (2006). Comparing SOM Neural Network with Fuzzy c-means, K-means and Traditional Hierarchical Clustering Algorithms. European journal of Operational Research, 174(3), 1742-1759.
[48] Charrad, M., Ghazzali, N., Boiteau, V., Niknafs, A., and Charrad, M.M., (2014). Package 'NbClust'. J. Stat. Soft, 61, 1-36.
[49] Dunn, J.C., (1973). A fuzzy Relative of the ISODATA Process and its Use in Detecting Compact Well-Separated Clusters.
[50] Bezdek, J., (1981). Pattern Recognition with Fuzzy Objective Algorithms Plenum Press New York Google Scholar.
[51] Meyer, D., Dimitriadou, E., Hornik, K., Weingessel, A., and Leisch, F., (2015). e1071: Misc Functions of the Department of Statistics, Probability Theory Group, TU Wien. In.
[52] Ligges, U., and Mächler, M., (2003). Scatterplot3d - an R Package for Visualizing Multivariate Data. Journal of Statistical Software, 8(11), 1-20.
[53] Tabachnick, B.G., and Fidell, L.S., (2013). Using Multivariate Statistics (Sixth ed.). Boston: Pearson.
[54] Awang, Z., Afthanorhan, W.M.A.W., and Asri, M., (2015). Parametric and Non Parametric Approach in Structural Equation Modeling (SEM):

The Application of Bootstrapping. Modern Applied Science, 9(9), 58.
[55] Hoyle, R.H., (1995). Structural Equation Modeling: Concepts, Issues, and Applications: Sage.
[56] Wheaton, B., Muthen, B., Alwin, D.F., and Summers, G.F., (1977). Assessing Reliability and Stability in Panel Models. Sociological Methodology, 8, 84-136.
[57] Steiger, J.H., (2007). Understanding the Limitations of Global Fit Assessment in Structural Equation Modeling. Personality and Individual Differences, 42(5), 893-898.
[58] Hooper, D., Coughlan, J., and Mullen, M., (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. Articles, 2.
[59] Hu, L.T. and Bentler, P.M., (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives. Structural equation modeling: A Multidisciplinary Journal, 6(1), 1-55.
[60] Rosete, D. and Ciarrochi, J., (2005). Emotional Intelligence and Its Relationship to Workplace Performance Outcomes of Leadership Effectiveness. Leadership & Organization Development Journal, 26(5), 388-399.
[61] O'Boyle, E.H., Humphrey, R.H., Pollack, J.M., Hawver, T.H., and Story, P.A., (2011). The Relation between Emotional Intelligence and Job Performance: A meta-analysis. Journal of Organizational Behavior, 32(5), 788-818.
[62] Carmeli, A., (2003). The Relationship between Emotional Intelligence and Work Attitudes, Behavior and Outcomes: An Examination among Senior Managers. Journal of Managerial Psychology, 18(8), 788-813.
[63] Ignat, A.A. and Clipa, O., (2012). Teachers' Satisfaction with Life, Job Satisfaction and Their Emotional Intelligence. Procedia-Social and Behavioral Sciences, 33, 498-502.
[64] Ellis, N., (2013). Corporate Social Responsibility and the Quality of Seafarers Accommodation and Recreational Facilities. Paper Presented at the IMISS2013–Proceedings of the International Scientific Meeting for Corporate Social Responsibility (CSR) in Shipping.
[65] Progoulaki, M. and Roe, M., (2011). Dealing with Multicultural Human Resources in a Socially Responsible Manner: a Focus on the Maritime Industry. WMU Journal of Maritime Affairs, 10(1), 7-23.