

İSTANBUL TECHNICAL UNIVERSITY ★ GRADUATE SCHOOL OF SCIENCE
ENGINEERING AND TECHNOLOGY

**A QUANTITATIVE ANALYSIS OF LEISURE PARTICIPATION AMONG
SEAFARERS BY STRUCTURAL EQUATION MODELLING**

M.Sc. THESIS

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Department of Maritime Transportation Engineering

Maritime Transportation Engineering Programme

JUNE 2016

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İSTANBUL TEKNİK ÜNİVERSİTESİ ★ FEN BİLİMLERİ ENSTİTÜSÜ

**YAPISAL EŞİTLİK MODELLEMESİYLE DENİZCİLERİN SERBEST ZAMAN
KATILIMLARININ NİCEL ANALİZİ**

YÜKSEK LİSANS TEZİ

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To my spouse and children,

FOREWORD

On the top of my efforts, the success of my research depends largely on the encouragement and guidelines of many others. I want to express my gratitude to the people who have been involved in the successful completion of this research.

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May 2016

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ABBREVIATIONS

AMOS	: Analysis Moment of Structure
CB	: Covariance Based
CC	: Change Criterion
CFA	: Confirmative Factor Analysis
CFI	: Comparative Fit Index
CL	: Casual Leisure
Cmax	: Maximum Change Criterion
CR	: Geographic Information Systems
EI	: Emotional Intelligence
EQ-i	: Bar-on Emotional Quotient
FCM	: Fuzzy C-Means
GFI	: Goodness of Fit Index
GLE	: Generalized Least Square
ILO	: International Labour Organization
LSS	: Leisure Satisfaction Scale
ML	: Maximum Likelihood
MLC	: Maritime Labour Convention
MLE	: Maximum Likelihood Estimator
MSCEIT	: The Mayer-Salovey-Caruso Emotional Intelligence Test
NFI	: Normed Fit Index
RMSEA	: Root Mean Square Error of Approximation
SCLM	: Serious and Casual Leisure Measure
SEIS	: Generalized Autoregressive Conditional Heteroskedasticity
SEM	: Error sum-of-squares
SL	: Serious Leisure
SLIM	: Serious Leisure Inventory and Measure
SWLS	: Satisfaction with Life Scale
TLI	: Tucker-. Lewis Index
VB	: Variance Based

SYMBOLS

CC_{pro}	: Proportional chance criteria
CC_{max}	: Maximum chance criterion
χ^2	: Chi-square
df	: Degree of freedom
α	: Significance level
p	: Probability level
μ	: Mean of population values
σ	: Standard deviation
σ^2	: Variance

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A QUANTITATIVE ANALYSIS OF LEISURE PARTICIPATION AMONG SEAFARERS BY STRUCTURAL EQUATION MODELLING

SUMMARY

Social isolation of the seafarers - which induces human factor in marine accidents - is an important problem driver in the ship environment. Seafarers are being away from land, their family, their friends for many months and accordingly they are inherently isolated from social world while they are serving on-board. On the other hand, emotional competencies and subjective well-being are able to break social isolation. Also, it is suggested by some researchers that ordinary participation in leisure activities can enhance individual emotional development, provide physical and mental health as well as an improved social interaction and produce satisfaction with life. Furthermore, Maritime Labour Convention, 2006 (MLC, 2006) adopted by the International Labour Organization (ILO) points out the significance of providing the recreational facilities both on-board and on-shore.

In this context, the aim of this study is to classify participants into two group as serious leisure (SL) or casual leisure (CL), and to compare serious and casual leisure groups each other based on demographic specifications, leisure satisfaction, satisfactions with life and emotional abilities. Besides, this research intends to find out whether there are any relationships between leisure participation, leisure satisfaction, life satisfaction and emotional intelligence among seafarers by Structural Equation Modelling (SEM).

Thus a survey has been conducted among 217 seafarers by means of a questionnaire including "Serious and Casual Leisure Measure (SCLM)", "Leisure Satisfaction Scale (LSS)", "Shcutte Emotional Intelligence Scale (SEIS)" and "Satisfaction with Life Scale (SWLS)", and the results have been evaluated. All calculations have been performed by using IBM SPSS Statistics 23, IBM SPSS Amos 23 and latest version of Rstudio.

Fuzzy C-Means cluster analysis is conducted to classify leisure participants by factors of SCLM. After classifying participants as serious or casual, discriminant analysis is applied to evaluate importance level of each factors and to identify which factors make better distinction between clusters. Next, in order to demonstrate the profile of clusters differences between serious and casual groups are identified by crosstabs including demographics, frequency of doing leisure activities, leisure satisfaction, life satisfaction and emotional intelligence and chi-square analysis is utilized to recognize whether results are statistically significant.

Finally, Structural Equation Model (SEM) is used to find out the relationship between leisure participation, leisure satisfaction, life satisfaction and emotional intelligence among seafarers. test first conceptual model of research established to break social isolation of seafarers. It is aimed to examine regression and path coefficients between latent factors and observed variables in accordance with established conceptual model.

As a result of all findings, seafarers can be divided into two groups as serious and casual based on their leisure participation. Besides, the serious leisure participants

have more leisure satisfaction, more emotional intelligent and more satisfaction with their lives than casual ones. Furthermore, there are positive relationship between leisure participation, leisure satisfaction, life satisfaction and emotional intelligence among seafarers. Consequently, providing leisure facilities both on-board and onshore for seafarers, and supporting and encouraging them to join leisure activities as a serious participant can break social isolation by enhancing the emotional intelligence and life satisfaction. Therefore, specific training programs for encouraging seafarers to participate recreational and leisure activities could be conducted by authorities.

YAPISAL EŞİTLİK MODELLEMESİYLE DENİZCİLERİN SERBEST ZAMAN KATILIMLARININ NİCEL ANALİZİ

ÖZET

Her denizci gemide çalışırken sosyal izolasyona maruz kalmaktadır. Denizciler karadan, ailelerinden, sevdiklerinden ve arkadaşlarından kontratları boyunca ayrı kalırlar. Gün geçtikçe azalan mürettebat sayısına karşın sorumluluklar, iş yükü ve evrak işleri sürekli artmaktadır. Bunun yanı sıra, gemi ortamında bir denizcinin arkadaşlık kurabileceği kişi sayısı da oldukça sınırlıdır ve bazen kişisel uyumsuzlıklardan dolayı hiç bir sosyal ilişkisi bile olmayabilir. Ayrıca, gemi ortamı denizciler için hem çalışma, hem dinlenme hem de yaşama ortamıdır. Bütün yaşamsal faaliyetlerini aynı kısıtlı ortamda gerçekleştirmek zorundadırlar. Kısacası, denizciliğin doğasında sosyal izolasyon mevcuttur.

İnsan faktörü deniz kazalarına sebep olan ana unsur olarak görülmektedir. İnsan hatalarında büyük bir oran ile sosyal izolasyondan ve onun insanlar üzerindeki etkilerinden kaynaklanmaktadır. Başka bir deyiş ile, denizcilerin kontratları süresince sürekli mağruz kaldıkları sosyal izolasyon deniz kazalarına dolaylı olarak sebep olmaktadır.

Duygular sosyal ve iletişimsel fonksiyonları içerir ve ayrıca insanların düşüncelerini ve niyetlerini birbirlerine iletir. Duyguların iyi bir düzeyde algılanması, düzenlenmesi ve kullanılması sosyal iletişimi artırır ve sosyal izolasyonun etkisini azaltır. Ayrıca kişilerin yaşamlarından duydukları tatmin seviyeleri ile sosyal izolasyonun etkisi arasında negatif yönlü bir ilişki vardır. Yani, yaşam tatminleri ve duygusal zekaları yüksek kişiler sosyal izolasyonun etkisini daha az hissederler. Bununla birlikte, serbest zaman aktivitelerinin duygusal zekayı arttırdığı, yaşam tatminini yükselttiği ve sosyal etkileşimi güçlendirdiği bilinmektedir. Buna ek olarak, Uluslararası Çalışma Örgütü Denizcilik Çalışma Sözleşmesinde (MLC, 2006) serbest zamana yönelik rekreasyonel imkanların gemide ve sahil tehislerinde sağlanmasının önemini vurgulamaktadır.

Bu bağlamda sosyal izolasyona maruz kalan denizcileri, serbest zaman aktivitelerine yönlendirerek, onların sosyal iletişimlerinin ve duygusal zekalarının artması ve yaşam tatminlerinin yükselmesi ile sosyal izolasyonun ve deniz kazalarında insan faktörünün etkisinin azalabileceği ön görülüp, bu kavramlar arasındaki ilişkiler incelenmiştir. Serbest zaman katılımcısı olan denizcilerin ciddi ve kayıtsız olmak üzere iki gruba ayrılıp ayrılamadığı incelenmiştir. Daha sonra ciddi ve kayıtsız serbest zaman katılımcılarının tipolojilerini çıkarmak için, bu iki grup kendi aralarında demografik özelliklerine, serbest zaman tatmin düzeylerine, yaşam tatmin düzeylerine ve duygusal zekalarına göre kıyaslanmıştır. Ayrıca, denizciler arasında serbest zaman katılımı, serbest zaman tatmini, yaşam tatmini ve duygusal zeka düzeyleri arasındaki ilişkilerin incelenmesi için Yapısal Eşitlik Modellemesi (YEM) kurulmuştur.

Araştırmanın çalışma gurubu farklı yeterlilik düzeyindeki, 23'ü kadın, 194'ü erkek olmak üzere 217 Türk denizciden oluşmaktadır. Bütün istatistiksel analizler IBM

SPSS Statistics 23, IBM SPSS Amos 23 ve Rstudio'nun en son sürümü kullanılarak gerçekleştirilmiştir.

İlk olarak, örnekleme ve çalışmanın amacına uygun ölçeklerin seçilmesi için literatür taraması yapılmış ve en uygun ölçekler belirlenmiştir. Sonrasında, seçilmiş olan “Ciddi ve Kayıtsız Serbest Zaman Ölçeği (CKSZ)”, “Serbest Zaman Tatmin Ölçeği”, “Yaşam Tatmin Ölçeği” ve “Duygusal Zeka Ölçeği” nin ölçme modellerinin doğrulanması amaçlanmıştır. Bu bağlamda, kayıp değerler, uç değerler, çoklu doğrusallık, tekillik ve normallik testleri yapılmış, güvenilirlik ve doğrulayıcı faktör analizi sonuçları incelenmiştir. Kayıp değer oranının %3 den az olması sebebiyle serilerin ortalamaları yöntemi ile kayıp değerlere yeni değerler atanmıştır. Uç değerlerin sonucu saptıracağı ve örneklem dışı olabilecekleri düşünüldüğünden bu değerler veri setinden çıkartılmıştır. Yapılan analizler sonucunda bütün değişkenler arasında çoklu doğrusallık ve tekillik sorunu bulunmamıştır. Ayrıca parametrik testlerin en önemli ön şartlarından biri olan normal dağılım varsayımının sağlanması için kesikli verilerde kullanılan veri iyileştirme/dönüştürme yöntemleri araştırılmış ve veri setine en uygun olan dönüşüm metodu uygulanmıştır. Son olarak her bir ölçeğin alt faktörleri ile birlikte kabul edilir düzeyde iç tutarlılık katsayısına sahip oldukları ve faktör yapılarının bu çalışmanın örnekleme için doğrulandığı görülmüştür. Bu testler sonucunda bütün ölçeklerin ileriki aşamalarda parametrik testlerin uygulanması için kabul edilebilir anlamlılık düzeyinde olduğu gözlemlenmiştir.

Daha sonra, CKSZ ölçeğinin faktörlerine göre serbest zaman katılımcılarının kaç kümeye ayrıldığı için Rstudio istatistik programında NbClust paketi kullanılmıştır. Kesikli veriler için en uygun uzaklık ölçümü olan öklid uzaklığı kullanılmış, Ward ve K-means metotları ile en uygun küme sayısı belirlenmeye çalışılmıştır. Analiz sonucunda, bu ölçeğin dokuz faktörlü yapısı ışığında en uygun küme sayısının 2 olduğu belirlenmiştir. Küme sayısı belirlendikten sonra, serbest zaman katılımcılarını ait oldukları kümelerle yerleştirmek için Fuzzy C-Means (FCM) algoritması kullanılmıştır. Bu algoritma Rstudio'da “e1071” paketindeki “cmeans” komutu ile çalıştırılmıştır. FCM analizi sonucunda, 108 serbest zaman katılımcısı ciddi serbest zaman katılımı grubuna, 109 serbest zaman katılımcısı da kayıtsız serbest zaman katılımı grubuna yerleştirilmiştir. Kümelerin faktörler bazında ortalamaları incelendiğinde, ciddi katılımcıların ortalamalarının, kayıtsız katılımcılardan yüksek olduğu gözlemlenerek, kümeleme analizi doğrulanmıştır.

Kümeleme analizinden sonra, CKSZ'nin hangi faktörünün daha iyi ayırma yüküne sahip olduğunu ve faktörler arası önem sıralarını belirlemek için ayırma (diskriminant) analizi uygulanmıştır. Kovaryans matrislerinin eşitliği “Box-M” testi ile test edilmiş ve $p < .001$ düzeyinde anlamlı bulunmuştur. Dolayısıyla kovaryans matrislerinin eşit olduğu durumlarda kullanılan doğrusal diskriminant analizi yürütülmüştür. Araştırmada 2 küme olduğu için bir adet diskriminant fonksiyonu üretilmiştir ve bu fonksiyonun değerlerinin (kanonik korelasyon, öz değer ve Wilk's Lambda) kabul edilebilir düzeyde olduğu görülmüştür. Diskriminant fonksiyonunun geçerli olduğunun belirlenmesinden sonra, kümeler ve faktörler arasındaki ilişkiler incelenmiştir. Analiz sonuçlarında, bütün faktörlerin kanonik korelasyon değerlerinin ve ayırma yüklerinin kabul edilebilir düzeyde olduğu görülmüştür. Ayrıca, “Yeterlilik Hissi” faktörünün en iyi ayırma gücüne sahip olduğu, öte yandan “Kişilik Özelliği” faktörünün ise en zayıf ayırma yüküne sahip olduğu tespit edilmiştir. Ayırma analizinin başarısını ölçmek ve geçerliliğini test etmek için doğru sınıflandırma oranının hesaplanan nisbi şans kriteri ve maksimum şans kriterinden fazla olması gerekmektedir. Hesaplamalar sonucunda, doğru sınıflandırma oranının (%97.2) nisbi

şans kriterinden (%50) ve maksimum şans kriterinden (%50) oldukça yüksek olduğu gerekçesiyle, yapılan ayırma analizinin geçerli bir analiz olduğu ve şansla sınıflandırmanın ötesinde doğru bir sınıflandırma yaptığı kabul edilmiştir.

Daha sonra, çapraz tablolar kullanılarak ciddi ve kayıtsız serbest zaman katılımcılarının tipolojileri çıkartılmıştır. İstatistiksel anlamlılık testi için Chi-square testinden yararlanılmıştır. Chi-square değerleri incelendiğinde ciddi ve serbest zaman katılımcılarının demografik özelliklerine göre anlamlı bir farklılık göstermediği görülmüştür ($p > .05$). Öte yandan, serbest zaman tatminlerine, yaşam tatminlerine ve duygusal zekalarına göre anlamlı düzeyde farklılık gösterdikleri tespit edilmiştir ($p < .001$). Analiz sonucunda, ciddi serbest zaman katılımcılarının kayıtsız katılımcılara nazaran daha yüksek serbest zaman tatminine, daha yüksek yaşam tatminine ve daha yüksek duygusal zekaya sahip oldukları gözlemlenmiştir.

Son olarak, literatürdeki çalışmalar baz alınarak ve çalışmanın amacına ithafen kurulan kavramsal modelin test edilmesi için parametrik testlerde kullanılan en yüksek olasılık kestirim (Maximum Likelihood) yöntemi ile Yapısal Eşitlik Modellemesi (YEM) kullanılmıştır. Bu kavramsal modelde serbest zaman katılım düzeyi, serbest zaman tatmin düzeyi, yaşam tatmin düzeyi ve duygusal zeka düzeyi arasındaki ilişkiler incelenmiştir. Geliştirilen bu modelde, serbest zaman katılımı gizli dışsal (exogenous) değişken olarak; serbest zaman tatmini ve yaşam tatmini gizli içsel (endogenous) değişken olarak; duygusal zeka ise gözlenen (ölçülen) değişken olarak ele alınmıştır. İlk kurulan modeldeki yollardan ikisi istatistiksel olarak anlamsız olduğundan, bu iki yol modelden çıkartılıp yeni bir model kurulmuş ve son modeldeki bütün z değerlerinin istatistiksel olarak anlamlı olduğu görülmüştür. Son modele ilişkin iyilik uyum indekslerinin de kabul edilebilir düzeyde olduğu saptanmıştır. Serbest zaman katılım düzeyi ile serbest zaman tatmin düzeyi arasında (.83) çok güçlü pozitif yönlü bir ilişkinin olduğu tespit edilmiştir. Bu demek oluyor ki, serbest zaman katılım düzeyleri yüksek olan kişilerin, serbest zaman tatminleri de yüksek olmaktadır. Ayrıca serbest zaman tatmini ile yaşam tatmini (.52), serbest zaman tatmini ile duygusal zeka (.42) ve yaşam tatmini ile duygusal zeka (.42) arasında istatistiksel olarak anlamlı ve orta düzeyde bir ilişki saptanmıştır. Sonuçlar gösteriyor ki, serbest zaman katılımı, serbest zaman tatmini, yaşam tatmini ve duygusal zeka arasında pozitif yönde anlamlı bir ilişki mevcuttur. Diğer bir ifade ile, serbest zaman katılımı yüksek olan kişinin, serbest zaman tatmini yüksek ve dolayısı ile yaşam tatmini ve duygusal zekası da yüksek olmaktadır.

Bu bulgular ile birlikte literatürde, denizcilere sağlanan serbest zaman aktivite imkanlarının verimliliği ve emniyeti arttırdığı, donatanın ekipman ve gemi üzerine yaptığı masrafları azalttığı ve böylece operasyonel maliyetleri en aza indirdiği görülmektedir. Bütün bu bilgiler ışığında özetlemek gerekirse, bir denizci ciddi düzeyde serbest zaman aktivitelerine katılırsa, serbest zaman tatmini artacak, buna bağlı olarak yaşam tatmini ve duygusal zekası da yükselecek ve böylece denizciliğin doğasında var olan sosyal izolasyonun etkisini daha az hissedecektir. Ayrıca, sosyal izolasyonun sebep olduğu emniyetsizlikten, dikkatsizlikten ve motivasyon eksikliğinden doğan deniz kazaları göz önünde bulundurulursa, denizcilere sağlanacak olan hem gemideki hem de limanlardaki serbest zaman aktivite imkanlarının denizciliğe pozitif yönde çok önemli katkılar sağlayacağı düşünülmektedir. Bu bağlamda denizcilerin serbest zaman aktiviteleri konusunda bilgilendirilmesi, eğitilmesi ve cesaretlendirilmesi gerekmektedir.

1. INTRODUCTION

In modern society, people separate varied behavioural 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 (Fernandez & Krootjes, 2007). 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 (Fernandez & Krootjes, 2007).

Nowadays, seafarer has to work long hours, with voyages lasting many months and with short time shore periods (Ellis & Sampson, 2013). Accordingly, when it comes to seafarer's rest, the standards accommodation and recreational facilities supplied to them may have remarkable importance in assisting to rescue from mental and cognitive fatigue, and stress (Kaplan, 1995; Maas et al, 2009; Van de Glind et al, 2007).

According to study of Ellis & Sampson (2013), the most commonly provided recreational facilities on-board are DVD libraries, followed by books, and less frequently music systems, computer terminals, karaoke machines, and games. The most infrequently provided recreational facility is internet access (Ellis & Sampson, 2013). Also, most of ships have recreational room containing different facilities such as; fitness equipment, table tennis, dart charge, etc. Besides, a lack of recreational facilities is well-known fact that many seafarers experienced negative aspects of it (Ellis et al, 2012).

The human element is considered as a main factor contributing to incidents at sea (Hetherington et al, 2006). The reason of human factor causing marine incidents and marine retentions is mostly based on social isolation and its effects on seafarers (Sampson & Thomas, 2003). Emotions serve social and communicative functions, carrying off information about people's thoughts and intentions and coordinating social encounters (Keltner & Haidt, 2001). So emotional abilities are considered to be important for social interaction. Therefore, it is required to handle emotional information and to manage emotional dynamics intelligently to maintain the social

world (Lopes et al, 2004). 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 (Buelga et al, 2008; Chipuer et al, 2003; Heinrich & Gullone, 2006; Toner & Heaven, 2005). There is correlation between life satisfaction and social life. It can be said that the happier life produces the livelier social life (Becchetti et al, 2008), and also more intense social life boosts more life satisfaction (Helliwell 2006; Sarracino, 2010).

Moreover, it is suggested by some researchers that ordinary participation in leisure activities and positive leisure satisfaction can enhance individual emotional development by cutting back personal anxiety, depression, and anger (Dumazedier, 1967; Johnsson-Smaragdi & Jönsson, 2006; Rojek, 2010; Wu, 2010). Also, leisure activities provide physical and mental health as well as an improved social interaction, psychological security, happiness and self-esteem (Iso-Ahola, 1997; Wu, 2010). 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.

Furthermore, International Labour Organization (ILO) (2015) points out the significance of providing the recreational facilities on Maritime Labour Convention, 2006 (MLC-2006). Owners are held responsible for providing and maintaining “decent accommodations and recreational facilities for seafarers working or living on board, or both, consistent with promoting the seafarers’ health and well-being in accordance with the ships’ national legislation” (ILO, 2015, p. 46). Also, MLC-2006 “contains a significant level of technical guidance with respect to national implementation of the standards for on-board accommodation and recreational facilities” (ILO, 2015, p. 49). It has been noted the importance of providing not only on-board facilities but also shore-based welfare centres which are “located in or near ports, are important way to provide seafarers, who may be on extended voyages at sea, with access to health and welfare services in a foreign country, as well as a social environment” (ILO, 2015, p. 56). It is also required to provide that “meeting and recreation rooms”; “facilities for sports and outdoor facilities, including competitions”; “educational facilities”; “where appropriate, facilities for religious observances and for personal counselling” (ILO, 2015, p. 56). Besides, according to ILO (2015), all on-board recreational facilities must

be “inspected and found to meet national laws and regulations or other measures implementing the requirements of MLC, 2006” (p. 62).

1.1 Background of the Problem

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, 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 (Swift, 2015). The long and short of it is that seafarers are inherently isolated from social world while they are serving on-board.

Due to the knock on effect of changing conditions in the industry, seafarers have to work long hours, with voyages lasting many months and with short time shore periods. Thus, social isolation of seafarers is dramatically increasing (Swift, 2015).

In the first step, we should identify what social isolation is. In simple words, social isolation is referring to the absence of relationships with other people, which is often involuntary and experienced negatively by being separation from others (de Jong Gierveld et al, 2006). According to Hawthorne (2006), social isolation is “living without companionship, having low levels of social contact, little social support, feeling separate from others, being an outsider, isolated and suffering loneliness” (p.1). It depends on a lack of quantity and quality of social contacts (Delisle, 1988). It is also one form of the psychological state of alienation and it has potential to produce feelings of bedroom, marginality, exclusion, anger, despair, sadness, frustration and especially, loneliness (Carotenuto et al, 2012; Biordi & Nicholson, 2013). When social isolation is considered, loneliness is the first concept that comes to mind. According to Perlman and Peplau (1981) “loneliness is an unpleasant experience that occurs when a person’s network of social relations is deficient in some important way, either quantitatively or qualitatively” (p. 31). This is including situations, in which the number of existing relationships is smaller than is considered desirable or admissible, as well as situations where the intimacy one wishes for has not been realized (de Jong Gierveld, 1987). Loneliness and social isolation can exist apart from each other. Social isolation might lead to loneliness, but loneliness is not, in itself, a necessary condition of social isolation (Biordi & Nicholson, 2013). The distinction between loneliness and social

isolation is that loneliness is the subjective evaluation of relationships in association with the personal standards, whereas social isolation is the objective state that has deprivation of social connectedness. (Bennet, 1980; Zavaleta et al, 2014). In ship environment, the social isolation is objective reality to which modern-day seafarers are particularly prone (Swift, 2015), and it can also trigger loneliness due to aforementioned on-board conditions. Both of this issues, can cause deep damages on seafarers, such as; decreased feeling of vitality, less energy and feeling tired more often, chronic illness, bout of sickness, increased likelihood of depression, decreased level of happiness and satisfaction with life in general, shorter life spans, higher likelihood of mortality (Holt-Lunstad et al, 2015; Qualter et al, 2015; Schinka et al, 2013). Moreover, effects of social isolation on seafarers contribute marine incidents and marine retentions by increasing well known effects of human factor (Sampson & Thomas, 2003).

1.2 Purpose of Study

As already mentioned, emotional competencies (Keltner & Haidt, 2001; Lopes et al, 2004) and subjective well-being (Heinrich & Gullone, 2006; Buelga et al, 2008; Toner & Heaven, 2005; Chipuer et al, 2003) are able to break social isolation which induces human factor in marine incidents (Sampson & Thomas, 2003). It is suggested by some researchers that ordinary participation in leisure activities and positive leisure satisfaction can enhance individual emotional development by cutting back personal anxiety, depression, and anger (Dumazedier, 1967; Johnsson-Smaragdi & Jönsson, 2006; Rojek, 2010; Wu, 2010). Also, leisure activities provide physical and mental health as well as an improved social interaction, psychological security, happiness and self-esteem (Iso-Ahola, 1997; Wu, 2010).

In this context, the aim of this study is to classify participants into two group as serious leisure (SL) or casual leisure (CL), and to compare serious and casual leisure groups each other based on demographic specifications, leisure satisfaction, satisfactions with life and emotional abilities. Besides, this research intends to find out whether there are any relationships between leisure participation, leisure satisfaction, life satisfaction and emotional intelligence among seafarers by Structural Equation Modelling (SEM).

1.3 Research Questions and Hypotheses

Research questions and hypotheses are assistance for the researcher by guiding to select the type of data as well as how to analyse and interpret the results (Blaikie, 2003; Leedy & Ormrod, 2010). Both of them present beginning positions of exploration for researcher. Research questions lead the research strategies and analyses, and present data collection methods (Blaikie, 2003). Hypotheses are proposed explanation to resolve the research problem, (Leedy & Ormrod, 2010).

Also, the researcher should target to disprove the opposite hypothesis due to the fact that hypothesis cannot be proven (Christensen et al, 2011; Leedy & Ormrod, 2010). Therefore, for testing of statistical hypothesis, two hypotheses are compared which are called as null and alternative. A null hypothesis is developed to suggest that there is no relation or difference between variables. The alternative hypothesis is the alternative to the null hypothesis and it expresses that there is some relation or difference. If the null hypothesis is rejected, subsequently, the alternative hypothesis is found to be acceptable at the conventional significance levels such as .05, .01.

The following section provides the background to propose the research questions and hypotheses. Subsequent collection and analysis of the data, the results are discussed to answer the research question and to demonstrate support or lack for each research hypothesis. Research questions and hypothesis based on them are as follows:

Research Question 1

In literature, it is found that different leisure activities have different leisure satisfaction levels (Chen et al, 2013; Huang & Carleton, 2003; Kao, 1992; Lu & Hu, 2005; Stebbins, 1997a, 1997b) and it refers to positive relationship between leisure participation level and leisure satisfaction (Akyıldız, 2013). Therefore, hypothesis is proposed to test this relationship among seafarers as follows:

R1: Is there a relationship between leisure participation and leisure satisfaction among seafarers?

Hypothesis 1

H₁₀: There is no significant relationship between leisure participation level and leisure satisfaction score.

H1_a: There is a significant relationship between leisure participation level and leisure satisfaction score.

Research Question 2

Participation in leisure activities is positively related to high life satisfaction, and negatively related to depression, anxiety and loneliness (Huebner et al, 2004). Leisure activity participation is predictive of better enhanced health and perceived greater life satisfaction (Menec & Chipperfield, 1997). Also Poulsen et al. underline the positive effects of leisure participation on life satisfaction (2006). Therefore, hypothesis is proposed to test this relationship among seafarers as follows:

R2: Is there a relationship between leisure participation and life satisfaction among seafarers?

Hypothesis 2

H2₀: There is no significant relationship between leisure participation level and life satisfaction score.

H2_a: There is a significant relationship between leisure participation level and life satisfaction score.

Research Question 3

Wu points out that there is correlation between leisure participation and emotional intelligence (2010). Also, it is suggested by some researchers that ordinary participation in leisure activities and positive leisure satisfaction can enhance individual emotional development by cutting back personal anxiety, depression, and anger (Dumazedier, 1967; Johnsson-Smaragdi & Jönsson, 2006; Rojek, 2010). In this context, hypothesis is proposed to test this relationship among seafarers as follows:

R3: Is there a relationship between leisure participation and emotional intelligence among seafarers?

Hypothesis 3

H3₀: There is no significant relationship between leisure participation level and emotional intelligence level.

H3_a: There is a significant relationship between leisure participation level and emotional intelligence level.

Research Question 4

There are numerous researches on relationship between leisure satisfaction and life satisfaction (Aquino et al, 1996; Griffin & McKenna, 1998; Heo & Lee, 2010; Huang & Carleton, 2003; Nimrod, 2007; Wang et al, 2008; Lapa, 2013). However, there is absence of study for seafarers to test relationship between leisure satisfaction and life satisfaction. Thus, hypothesis is proposed to test this relationship as follows:

R4: Is there a relationship between leisure satisfaction and life satisfaction among seafarers?

Hypothesis 4

H₄₀: There is no significant relationship between leisure satisfaction score and life satisfaction score.

H_{4a}: There is significant relationship between leisure satisfaction score and life satisfaction score.

Research Question 5

There are many studies in literate on relationship between leisure satisfaction and emotional intelligence (Dumazedier, 1967; Johnsson-Smaragdi & Jönsson, 2006; Rojek, 2010; Wu, 2010). However, there is no study for seafarers on relationship between these two concepts. So it is decided to propose hypothesis to test this relationship as follows:

R5: Is there a relationship between leisure satisfaction and emotional intelligence among seafarers?

Hypothesis 5

H₅₀: There is no significant relationship between leisure satisfaction score and emotional intelligence level.

H_{5a}: There is a significant relationship between leisure satisfaction score and emotional intelligence level.

Research Question 6

There are lots of research on relationship between life satisfaction and emotional intelligence (Gannon & Ranzijn, 2005; Kong & Zhao, 2013; Landa et al, 2006; Law et al, 2008; Ozer et al, 2016; Ruiz et al, 2014; Sanchez et al, 2015; Urquijo et al, 2015).

As in previous research questions, there is absence of study on this concept among seafarers. Thus, hypothesis is proposed to test this relationship as follows:

R6: Is there a relationship between life satisfaction and emotional intelligence among seafarers?

Hypothesis 6

H6₀: There is no significant relationship between life satisfaction score and emotional intelligence score.

H6_a: There is significant relationship between leisure satisfaction score and life satisfaction score

In the light of those first six hypotheses, first conceptual model of research is established as shown in Figure 1.1.

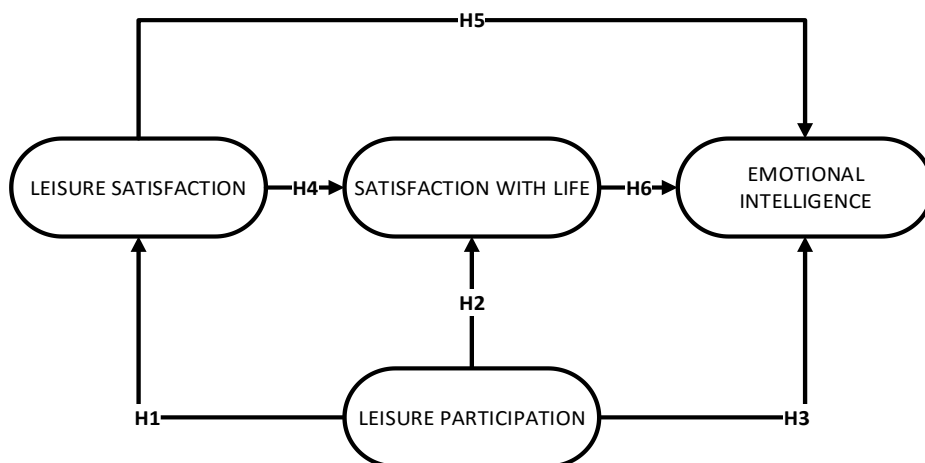


Figure 1.1 : First conceptual model of research.

Research Question 7

There is lots of evidence in the literature that leisure participant can be divided into two group as serious and casual (Akyıldız, 2013; Akyıldız & Argan, 2016; Stebbins,1982, 1992, 1996, 1997a, 1997b 2007). In the light of those research, hypothesis is proposed to test this relationship among seafarers as follows:

R7: Can seafarers be divided into two group depends on their levels of leisure participation as a SL or CL?

Hypothesis 7

H7₀: There is no significant difference between SL group and CL group.

H7_a: There is significant difference between SL group and CL group.

Research Question 8

There are findings to prove in the literature that serious leisure participation supplies higher leisure satisfaction than casual leisure participation (Akyıldız, 2013; Akyıldız & Argan, 2016). Therefore, hypothesis is proposed to test this difference among seafarers as follows:

R8: Do clusters detected by levels of leisure participation differ from each other based on leisure satisfaction?

Hypothesis 8

H8₀: There is no significant difference between SL and CL groups based on leisure satisfaction scores.

H8_a: There is significant difference between SL and CL groups based on leisure satisfaction scores.

Research Question 9

Heo et al. (2013) 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. Regarding this research, hypothesis is proposed as follows:

R9: Do clusters detected by levels of leisure participation differ from each other based on life satisfaction scores?

Hypothesis 9

H9₀: There is no significant difference between SL and CL groups based on life satisfaction scores.

H9_a: There is significant difference between SL and CL groups based on life satisfaction scores.

Research Question 10

Stebbins (2014) 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 this context, hypothesis is proposed to test whether

serious and casual leisure participants differ from each other based on their level of emotional intelligence as follows:

R10: Do clusters detected by levels of leisure participation differ from each other based on their emotional intelligence levels?

Hypothesis 10

H10₀: There is no significant difference between SL and CL groups based on emotional intelligence scores.

H10_a: There is significant difference between SL and CL groups based on emotional intelligence scores.

Research Question 11

It is observed from researches that there are effects of demographics on leisure participation level (Akyıldız, 2013; Kovacs, 2007). In this context, hypothesis is proposed to find out whether there are any differences among casual and serious participants based on research's sample demographics as follows:

R11: Do clusters detected by levels of leisure participation differ from each other based on demographic specifications?

Hypothesis 11

H11_{a0}: There is no significant difference between SL and CL groups based on ages.

H11_a: There is significant difference between SL and CL groups based on ages.

H11_{b0}: There is no significant difference between SL and CL groups based on genders.

H11_b: There is significant difference between SL and CL groups based on genders.

H11_{c0}: There is no significant difference between SL and CL groups based on marital statuses.

H11_c: There is significant difference between SL and CL groups based on marital statuses.

H11d₀: There is no significant difference between SL and CL groups based on educational levels.

H11d_a: There is significant difference between SL and CL groups based on educational levels.

H11e₀: There is no significant difference between SL and CL groups based on seafarers' competencies.

H11e_a: There is significant difference between SL and CL groups based on seafarers' competencies.

H11f₀: There is no significant difference between SL and CL groups based on duration of seafarers' sea service.

H11f_a: There is significant difference between SL and CL groups based on duration of seafarers' sea service.

H11g₀: There is no significant difference between SL and CL groups based on types of ship which seafarers work.

H11g_a: There is significant difference between SL and CL groups based on types of ship which seafarers work.

H11h₀: There is no significant difference between SL and CL groups based on frequencies of doing leisure activity during sea service.

H11h_a: There is significant difference between SL and CL groups based on frequencies of doing leisure activity during sea service.

Considering those hypotheses related to serious and casual leisure participation, second conceptual model of research is established as shown in Figure 1.2.

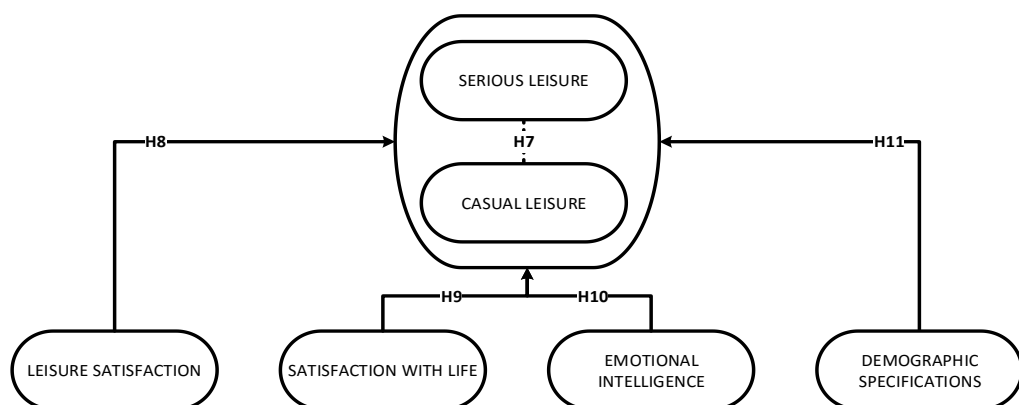


Figure 1.2 : Second conceptual model of research.

1.4 Limitations

The limitations of research are listed as follows;

1. The degree to accuracy of self-reports assuming that participants rate themselves honestly.
2. The study included only Turkish Seafarers. Therefore, the result of this study may not be universalized.
3. Due to the communicative difficulties in maritime sector, the data collecting process was assisted by third parties.

1.5 Delimitation

The primary delimitation of this research study includes the following:

1. The research questions are simple, and easy to understand in order to increase accurate interpretation of questions by seafarers.
2. The study is limited to selection of a relatively small population (n=217) compared to the total number of Turkish Seafarers who agree to participate in the research.
3. The study is limited to Turkish Seafarers.

1.6 Assumptions

Two assumptions are made with respect to this study.

1. All participants can answer the questionnaire honestly and truthfully.
2. All participants can read and understand each question carefully and select the most appropriate answer that best described them.

2. REVIEW OF THE LITERATURE

This chapter reviews the literature related to concepts of emotional intelligence, life satisfaction, leisure participation and leisure satisfaction. This section examines the relevant theories and researches in the field of concepts, and discusses them detail.

2.1 Leisure

Definitions of leisure goes back to ancient Greeks and still attracts interest of contemporary sociologists (Hurd & Anderson, 2010; Stebbins, 2011; McLean & Hurd, 2011). For example, in the writings of Aristotle and Plato, they approach leisure as time free from necessity to work and as a state of being in which activity is performed for its own sake. Still the phenomenon has been viewed as time away from work and other obligations during which distinctive activities could be pursued.

Taking into account these ideas, leisure may be defined as: “uncorked, contextually framed activity engaged in during free time, which people want to do and, using their abilities and resources, actually do in either a satisfying or a fulfilling way (or both)” (Stebbins, 2011, pp 4.). “Free time” is time away from unpleasant obligation, with pleasant obligation being treated here as essentially leisure where homo otiosus, leisure man, feels no significant coercion to enact the activity in question (Stebbins, 2000). There is also consensus on the primarily way to define leisure depends on three general topics: leisure as time, leisure as activity, and leisure as state of mind (Human Kinetics, 2010). Leisure is a time that is free from obligations, work (paid and unpaid) and tasks required for existing (sleeping, eating), a set of activities that are not work oriented or that do not involve life maintenance tasks, and a state of mind that includes perceived freedom, intrinsic motivation, perceived competence, and positive affects (Hurd & Anderson, 2010). In addition to those expression, categories of activity developed by Parker (1983) presents significant view to better understand the concept of leisure. Those five categories are originally presented here to grasp all meaning of them:

1. *Work, working time, sold time, subsistence time.* Although, as we have already seen, “work” has a wider meaning than employment, for the purpose of

analysing life space it is usually identified with earning a living. If an employee is on piece rates then it is “work”, or more precisely the product of work, that he sells; if he is on time rates then he sells so much working time. However, these are both ways of measuring work and working time, and differ only in the way the remuneration is calculated. “Subsistence time” lays emphasis on the purpose of work to the employee, that is, enabling him and his dependents to subsist.

2. *Work-related time, work obligations.* Apart from actual working time, most people have to spend a certain amount of time travelling to and from the place of work and in preparing or “grooming” themselves for work. In some cases, however, at least part of the travelling time may be regarded more as a form of leisure than as work-related; for example, time spent reading newspapers or books, chatting to fellow-travellers, or plating cards with them. Voluntary overtime and having a second job may also be regarded as related to the main working time rather than as part of it, as may activities in the no-man’s land between work and leisure, such as reading on the subject of one’s work when at game, attending conferences or trade union meetings which have a social as well as a work side, and so on.
3. *Existence time, meeting physiological needs.* This is the first of three non-work groups. We all have to spend a certain minimum of time on sleep and on the mechanics of living – eating, washing, eliminating, and so on. Beyond the minimum necessary for reasonably healthy living. Extra time spent on these things may be more like a leisure activity. Eating for pleasure, taking extra care with one’s appearance for a party or social occasion, sexual activity beyond the call of purely physiological need, are some examples which show that the line between the satisfaction of “existence” needs and leisure activities is not always easy to draw.
4. *Non-work obligations, semi-leisure.* Joffre Dumazedier (1967) has coined the term semi-leisure to describe “activities which, from the point of view of the individual, arise in the first place from leisure, but which represent in differing degrees the character of obligations.” The obligations are usually to other people, but may be to non-human objects, such as pets or homes or gardens. Again, the line between obligation and leisure is not always clear and depends to a large extent on one’s attitude to the activity. Gardening and odd-job work

around the home can be a chore or an absorbing hobby, and playing with the children can be a duty or a delight.

5. *Leisure, free time, spare time*, uncommitted time, discretionary time, choosing time. All the terms after “leisure” describe some aspect of what is meant by leisure. We saw earlier that residual definitions of leisure give it as time free from various commitments and obligations, and that “free” times is best regarded as a dimension of leisure. “Spare” time is a slightly different idea, implying that, like a spare tire, it is not normally in use but could be put to use. “Uncommitted” time suggests a lack of obligations, of either a work or non-work character. “Discretionary” or “choosing” time is perhaps the essence of leisure, because it means time that we can use at our own discretion and according to our own choice (Parker, 1983, pp. 8-9).

Leisure is found in the fourth and fifth categories. Those definitions harmonize well with the seven essential elements of leisure developed by Kaplan (1960). He argued that leisure is a) an antithesis to “work” as an economic function; b) a pleasant expectation and recollection; c) a minimum of involuntary social role obligations; d) a psychological perception of freedom; e) a close relation to values of the culture; f) an inclusion of an entire range from inconsequence and insignificance to weightiness and importance; and g) often, but not necessarily, an activity characterized by the element of play (Kaplan, 1960, pp. 22-25). Articles on casual and serious leisure give further substance to elements (f) and (g) (Stebbins, 1982, 1997a, 1997b).

Beside of those elements, 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 (Gould, 2005). One of them, serious leisure (SL) and casual leisure (CL), 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 (Gould, 2005). Also, the serious/causal relationship is still able to comprise earlier types of leisure (Gould, 2005).

After doing a lot of qualitative researches, Stebbins has constructed and developed SL (1982, 1992, 1997a, 2001a, 2004a, 2007, 2009, 2014) and CL (1996, 1997b, 2001b, 2004b, 2008) perspectives. Since its beginning, Stebbins’s theories on SL and CL have widely gained acceptance in the field of leisure (Shen & Yarnal, 2010). Especially, there has been carried out a lot of studies about concept of SL over the past 30 years

(Shen & Yarnal, 2010). In comparison with serious leisure, there has been inadequate attention on casual leisure's concept and it has gained few empirical studies (Hutchinson & Kleiber, 2005; Shiner & Parry, 2005; Stebbins, 2004b). In addition, Stebbins (2007) expresses that all nature and characteristics of casual leisure are ill defined in many cases and the studies on this issue are still continuing.

2.1.1 Serious leisure

The concept of the serious leisure has emerged through the extensive ethnographic studies of Stebbins (1982, 1992, 1996) 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” (Stebbins, 1992, p.3). The adjective "serious" exemplifies such qualities as earnestness, sincerity, importance, and carefulness. By serious leisure, Stebbins intent to point out a sense of the level of importance of the activity to a person rather than a sense of gravity (Lin, 2009). Better way to understand serious leisure is comparing it with the quality of casual leisure which is opposite to serious leisure and considerably less substantial (Stebbins, 2007).

Casual leisure is identified as “an immediately, intrinsically rewarding, relatively short-lived pleasurable activity requiring little or no special training to enjoy it” (Stebbins, 1997b, p. 18). It is fundamentally hedonic based on significant level of pure enjoyment, or pleasure (Stebbins, 1997b) and focuses sensory stimulation as inherent source of satisfaction and requires no career only least knowledge to participate (Akyıldız & Argan, 2016).

Serious leisure has six distinguished qualities which is “found exclusively or in highly elaborated form only in” serious leisure and set it apart from casual leisure (Stebbins, n.d., para. 8). These characteristics are 1) occasional need to persevere at the activity, 2) availability of a leisure career, 3) need to put in effort to gain skill and knowledge, 4) realization of various special benefits, 5) unique ethos and social world, and 6) an attractive personal and social identity (Stebbins, 1982; 1992). Those qualities can be respectively shortened that 1) *perseverance*, 2) *leisure career*, 3) *significant effort*, 4) *durable outcomes*, 5) *unique ethos*, 6) *strong identification*.

Perseverance implies pursuing determinedly leisure activities despite problems or difficulties in order to gain positive feelings and conquer adversity. Perseverance can range from persistence to occasional. Stebbins (1992) exemplifies those difficult as embarrassment, stage fright, anxiety, fatigue, freezing cold, injury and so on.

Leisure career is the second characteristic of serious leisure and “the tendency for amateurs, hobbyist, and volunteers to have career in their endeavours” (Stebbins, 1992, p.6). In order to gain long-term career, endeavours of participants have pursuit in the form of progress, achievement, turning points or future progress (Stebbins, 1992). Also, serious leisure participants make progress along five career stages which are “beginning, development, establishment, maintenance and decline” (Elkington & Stebbins, 2014, p.24). At the beginning level they have strong interest, then they want to develop their knowledge on their participation, next they establish their expertise and maintain their profession, and in the final step they endure declining interest.

Third characteristic, significant personal effort, which differentiate amateurs and hobbyist from dabblers and volunteers from trainees, is based on acquiring and developing knowledge, abilities, and skills. These efforts are attached to have a career in a serious leisure activity. “Manual dexterity, scientific knowledge, verbal skills, long experience in a role, showmanship and athletic prowess” are examples of these personal efforts (Stebbins, 1992, p.6).

Fourth, durable outcomes are positive consequences of SL participation. These are mostly personal and slightly social. Personal rewards: “self-actualization, self-expression, self-conception, self-gratification, self-enrichment, re-creation, monetary returns”, and Social rewards: “social attraction, group accomplishment” (Stebbins, 1992, pp. 94-95). Self-actualization derive from the realization SL participants’ talents, skills, knowledge or potential (Stebbins, 2001a). SL participants gain positive social identity from their special leisure field and this constitute self-conception. Memories of activity provide participant moral, cultural, or intellectual resources that contribute to self-enrichment (Stebbins, 1992). SL activities takes individual away from work, problems in life or other events, as a consequence of re-creation. Also financial rewarding can be found in some professional and amateur activities. Besides those benefits, self-gratification is the only individual outcome that is also characteristics of CL. On the other side, there are social rewards results from SL participation. One of them is social attraction that denotes the camaraderie that

“develops around a pursuit, the appeal of talking about it, and the exhilaration of being part of the scene” (Stebbins, 1992, p.95). The second one is group accomplishment that grows out of collaborative project” (Stebbins, 1992).

Fifth characteristic, unique ethos is the differentiating serious and un serious leisure by special beliefs, ideals, values, norms which are shared within the community of SL participants (Stebbins, 2001a). CL participants may also develop and maintain interpersonal relationship (Stebbins, 1997b). However, social word of CL “is by comparison much simpler in composition” (Stebbins, 2007, p. 56) and its short-lived nature is “not conducive to fostering the permanent shared attitudes, practices, values, beliefs, and goals” (p. 12).

Sixth and final characteristic, strong identification bounds up with the previous five characteristics. It is tendency of SL participants to “speak proudly, excitedly, and frequently about them to other people”, and to “present themselves” in terms of their leisure activities (Stebbins, 1992, p. 7). While SL participants have typical strong identity, CL participants “though hardly humiliating or despicable, is too superficial and transient to generate a special identity” (Stebbins, 2007, p.12).

Altogether, Stebbins’ researches basically provide the theoretical development of serious leisure. So far, other researchers have contributed by consulting the SL theory and “many focused on identifying or elaborating on one or more of the six SL qualities outlined” (Shen & Yarnal, 2010).

2.1.2 Casual leisure

Casual leisure, or unserious leisure is defined by Stebbins as “immediately, intrinsically rewarding, relatively short-lived, pleasurable core activity, requiring little or no special training to enjoy it” (1997b, p. 18). Its fundamental characteristic is pursuit of pleasure or hedonic endeavours for its significant level of pure enjoyment (Stebbins, 2012). Robert A. Stebbins coined this term (1982), which was depicted as all activity not classifiable as serious, in a conceptual statement of SL. Scientific concept of CL suffered from this residual status, until Stebbins (1997b, 2001b) noticing “its centrality” in leisure researches, (Stebbins, 2009). Stebbins carried out exploratory researches to elaborate the concept of idea, as he did earlier for SL (Jenkins & Pigram, 2004).

It is suggested that there are eight types of casual leisure: *play* (including dabbling, dilettantism), *relaxation* (e.g., sitting, napping, strolling), *passive entertainment* (e.g., through TV, books, recorded music), *active entertainment* (e.g., games of chance, party games), *sociable conversation* (e.g. gossip, “idle chatter”, joking), *sensory stimulation* (e.g. eating, drinking, sex, sightseeing), *casual volunteering* (e.g., handing out leaflets, stuffing envelopes), and *pleasurable aerobic activity* (Stebbins, 2004a; Stebbins, n.d.). Participants often tend to pursue the eight types of casual leisure in combinations of two and three at least as often as they pursue them separately (Stebbins, 2015a). For example, every type of this hedonic participation can provide individual to be relaxing and produce “passive play-relaxation”, “entertainment-relaxation”, and so on (Stebbins, 2015b).

According to Stebbins (2001b), casual leisure has five benefits: encouraging “creativity and discovery”, providing educational entertainment or “edutainment”, affording “regeneration or re-creation”, developing and maintaining “interpersonal relationships”, and enabling participants to boost “well-being and quality of life”.

2.1.3 Serious and casual leisure participation

There are few international serious leisure measurement scales in the literature (Gould, 2005; Tsaur & Liang, 2008; Gould et al, 2011). Also, there is only one scale developed by Akyıldız (2013) to measure level of leisure participation as serious and casual in Turkish language.

In the literature, Gould (2005) developed Serious Leisure Inventory and Measure (SLIM) to evaluate only serious leisure participation level in his doctoral dissertation. Heo & Lee (2010) created a scale consists of 4 items to identify leisure participants level as serious and casual. In other studies, either participants are supposed to be serious participants (Hultsman et al, 1989; Cheng & Tsaur, 2012) or only serious leisure participants are included into research (Brown, 2005; Gould et al, 2011; Kim et al, 2011; Dilley & Scraton, 2010).

Generally, most of researchers have been carried out studies to measure serious leisure participation and as stated by Stebbins (1997b) casual leisure participation remain as residual position in the literature. However, Akyıldız (2013) 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 groups as serious and casual. This scale has both international (Akyıldız & Argan, 2016) and Turkish version (Akyıldız, 2013) and includes distinguished qualities of serious leisure identified by Stebbins (1982, 1992).

2.2 Leisure Satisfaction

Principal benefit of participation in leisure activities is satisfaction (Hultsman et al, 1989). Satisfaction is fulfilment of one's drives, motives, needs or expectations (Mannell, 1989, p. 288), and the pleasure derived from this fulfilment (see, Oxford dictionaries). It is also a relative concept which is difference between what one owns and what one desires, and the less difference between them means the more satisfaction one has (Francken & van Raaij, 1981; Lounsbury & Hoopes, 1985).

According to Beard and Ragheb (1980), leisure satisfaction is composed of "the positive perceptions or feelings which an individual forms, elicits, or gains as a result of engaging in leisure activities and choices" (p. 22). Satisfying individual needs provides participants to gain positive feelings (Du Cap, 2002). It is also the level to indicate pleasure with participants' general leisure experiences and situations (Beard & Ragheb, 1980). Level of leisure satisfaction shows extent of participants' perceived satisfaction resulting from the meeting of the individual's felt or unmet needs through leisure activities (Beard & Ragheb, 1980). It is the social-psychological outcomes of leisure motivations and behaviours (Mannell & Kleiber, 1997).

Concept of leisure satisfaction dates back to 1960s (e.g., Grubb, 1961; Ingham, 1964) and it has two leading explorations of what constitutes or contributes to leisure satisfaction in the literature. One of them is leisure satisfaction derived from "subjective inner experience", and another one is leisure satisfaction associated with "objective external factors" (Kao, 1992, p. 10).

According to subjective inner experience models, dimensions of leisure satisfaction are determined from need states (Kao, 1992). In those models, respondents are asked to check which leisure needs statements are true to them (Beard & Ragheb, 1980) or how are these items applied to them in their favourite activities (Hawe, 1979; Pierce, 1980). Each dimension has several items which describe the leisure needs. Similar items were used in different studies due to their potential for sustaining leisure satisfaction (Kao, 1992). In one research leisure dimensions were defined as

psychological, educational, social, relaxation, physical, and aesthetic (Bear & Ragheb, 1980), in another one those are defined as intimacy, relaxation, achievement, novelty, mental, physical, excitement, and power (Pierce, 1980). All of these leisure satisfaction dimensions were classified as immediate leisure experiences (Kelly, 1987).

On the other hand, there are studies in literature to find out correlation between leisure satisfaction and objective external factors. Those external determinants have been found in early researches and they have been defined as participant characteristics (Foster & Jackson, 1979) environmental effects (Hazel et al, 1990; Hultsman et al, 1989) and social interactions (Buchanan, 1983; Connelly, 1987). All of those studies has been conducted in specific recreational activities such as, camping, hunting and fishing. Different factors could be found for different recreation activities, so there can't be common method to explain the level of perceived leisure satisfaction basis on external factors (Kao, 1992).

Mannel pointed out in his leisure study that subjective inner experiences gained in activities can more directly give rise to leisure satisfaction than external factors (as cited in Kao, 1992). Also it has been shown in early studies that inner experiences explain more variance than external factors in leisure satisfaction (Graefe & Fedler, 1986; Noe, 1987). Thus, leisure satisfaction can be defined as “the positive feelings one sustains from experiences in leisure settings” and subjective inner experience oriented approach is more suitable to define it (Kao, 1992, p. 14).

There are two approach to measure leisure satisfaction, those are multiple dimensions' measurement and global measurement (Kao, 1992). Multiple dimensions (Bear & Ragheb, 1980) is to identify the source of satisfaction, global one (Vaske et al, 1986) is to measure the intensity level of satisfaction. Thus, purpose of study is decisive factor to choice leisure satisfaction measurement approach (Kao, 1992).

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 are few studies on leisure satisfaction measurement for Turkish culture (Karlı et al, 2008; Akyıldız, 2013). One of them is LSS (Long Version) developed by Beard & Ragheb (1980) and adapted to Turkish by Karlı et al (2008) and other one is LSS developed by Akyıldız (2013). LSS developed by Akyıldız is based on global approach to measure level of participants' leisure satisfaction. As already

mentioned scale developed by Beard & Raghed is multiple dimensions, therefore it is decided to utilize LSS developed by Akyıldız in this research.

2.3 Life Satisfaction

Happiness is a fact that most people look for it in their life. It depends on high life satisfaction, prevalence of positive feelings and absence of negative feelings (Diener, 1984). Scientists produced a scientific term for happiness which is subjective well-being (SWB). SWB indicates the well-being and it relies on doing well in large areas of life, such as relationships, health, work, income, spirituality and leisure (Diener & Biswas-Diener, 2008). Due to subjective concept of life satisfaction that is unique to each individual, traditionally self-reporting instruments have been used to measure this concept rather than experts' options to judge another's happiness (Diener et al, 2000). Besides, there are efforts among SWB researchers to understand the factors that promote a satisfying and fulfilling life (Diener et al, 2002).

Life satisfaction is one major components of subjective well-being (Diener, 1984; Diener & Larsen, 1993). Life satisfaction belongs to self-assessment of quality of life based on one's own unique norms (Shin & Johnson, 1978). One can report high life satisfaction in conditions which his perceived life circumstances have high compliance with his own unique standard. According to Pavot & Diener (1993) "life satisfaction is a conscious cognitive judgment of one's life in which the criteria for judgment are up to the person" (pg., 102). High score of life satisfaction provides meaningful life and sharing goals and values which are important for them. Work performance and influences upon others can be improved by increasing of life satisfaction (Ignat & Clipa 2012).

There have been a lot of theoretical models of life satisfaction proposed up to now. These models can be divided into two perspectives; bottom-up and top-down theories (Diener, 1984; Headey et al, 1991; Schimmack, 2008).

The bottom-up theories approach life satisfaction as an individual's self-judgments relevant to ongoing life experiences and multiple life domains (Heller et al, 2004; Pavot & Diener, 2008; Pavot & Diener, 2010). Overall sense of life satisfaction consists of satisfaction with each component of personally relevant life domains (Pavot & Diener, 2010).

By contrast with bottom-up, according to the top-down theories, life satisfaction is function of one's static characteristics. In detail, life satisfaction is largely stable, because the effect of life events and changes in one's life conditions has a tendency to be temporary in nature (Pavot & Diener, 2010). While some people have a tendency to feel more satisfied with their lives, others have a propensity to feel less satisfied, just depending on who they are.

There has been considerable amount of studies focused on the relative validity of bottom-up versus top-down theoretical models (Headey, 2014; Headey et al, 1991; Lucas, 2004). Early study of Brief et al (1993) produces evidence for effects of personality on life satisfaction which comes from interpretation of objective life events. On the other hand, Heller et al (2004) shows in their meta-analytic effort that life satisfaction has a fairly high degree of stability based on top-down model, but an integrative model including the impact of domain satisfaction on life satisfaction. According to Schimmack (2008), there is bottom-up influences of life domains on life satisfaction and therefore changes in life domain produces changes in life satisfaction (bottom-up). Conversely, there may be some contribution of top-down influences on correlation between life satisfaction and life domains, but the evidence of top-down effect on life satisfaction is not clear (Schimmack, 2008). One can conclude that there is necessary to build comprehensive model which is a mixture of both top-down and bottom-up influences (Pavot & Diener, 2010).

Early survey instruments usually consisted of a single question about people's happiness or life satisfaction. As the studies in this field continuously increased, more multi-item scales have been appeared, with greater reliability and validity than the single-item instruments (Diener et al, 2009). The most common method is that ask the individual the extent to which they endorse certain statements, such as "I am just as happy as when I was younger" and "As I look back on my life, I am fairly well satisfied." Life Satisfaction Index (Neugarten et al, 1961), Philadelphia Geriatric Center Morale Scale (Lawton, 1975) and the Life Satisfaction in the Elderly Scale (Conte & Salamon, 1982) are examples of the above and they are designed to measure life satisfaction of elderly people. On the other hand, many of those scales are not able to evaluate only the judgmental quality of life satisfaction (Diener et al, 1985). Thus, Diener et al. (1985) develop a multi-item scale to measure life satisfaction as a cognitive-judgmental process, the "Satisfaction with Life Scale" (SWLS). The SWLS

is a short instrument that has 5-items and it is designed to measure global cognitive judgments of one's life satisfaction. SWLS is probably the most commonly used and cited measure for life satisfaction in scientific literature (Diener & González, 2011). The scale has been evaluated in several cultures and has been translated into several languages including Arabic, Chinese, Czech, Danish, Dutch, French, Georgian, German, Greek, Hebrew, Hindi, Hungarian, Icelandic, Italian, Japanese, Khmer, Korean, Norwegian, Persian, Portuguese, Polish, Romanian, Russian, Serbian, Setswana, Spanish, Swedish, Thai, Turkish, Urdu. Furthermore, SWLS can be applied different age group from teenage to elderly (Durak et al, 2010).

Durak et al. (2010) translate SWLS into Turkish Language and examine the psychometric properties of adapted version in different Turkish samples (University students, Elderly, Correctional Officers). Consistent with the original scale, adopted single-factor solution model is valid and reliable for all three different Turkish samples (Durak et al, 2010).

2.4 Emotional Intelligence

Emotions are essential for human functioning and it has been issue of interest since the earliest writings of pre-Socratic philosophers (Lundun, 1991). Emotion is a way in which people perceive the world with meanings (Lutz & Abu-Lughod).

This perspective points out the individual as a making the social world meaningful through emotion. However, it also advises that emotion of individual is naturally about people's experience of the world (Tiedens & Leach, 2004). Therefore, there has been increase in the number of modern thinkers who argue that emotion comprehension is essential to understand social experience and behaviour (Tiedens & Leach, 2004).

Principles of Psychology is a monumental text in the history of psychology, written by William James in 1890 and it is one of the most famous publication ever written on emotion in his Principles of Psychology (Ciccarelli & White, 2013). He introduced a new theory of emotion arguing that an emotion is instead the consequence rather than the cause of the bodily experiences associated with its expression (Fancher & Rutherford, 2012). Although psychology's interest and approaches toward emotion decreased in subsequent years, by the 1970s interest in mood, affect, and other non-rational processes had risen again with the tide of the cognitive revolution (Chapman,

2005). In the late 20th century, a new theory uniting emotions and cognition had arisen: Emotional Intelligence (EI) (Chapman, 2005).

It is known that the emotional intelligence is useful tool for improving the quality of life and the people performance within work (Saricam et al, 2015). Emotional intelligence is described as the perception of the feelings of self of the individual and others, and using this in steps of problem-solving process (Mayer et al, 2000; Salovey & Mayer, 1990).

Emotional intelligence in workplace is a multi-dimensional constituent (Goleman, 1998). It is composing of self-awareness, self-regulation, motivation, empathy, and social skills. High levels of self-awareness provide executives to boost their self-confidence and take others attention by gaining more respects. Through self-regulation, they can purposefully comprehend other people's needs. Executives play a positive role in motivating others by being balanced, self-motivated, optimistic and highly-spirited. Being capable of empathizing with others as well as managing interpersonal relations provides positive effect on motivating subordinates. The executives' emotional intelligence allows them to treat subordinates as individuals with unique needs and talents. Empathetic executives use their social skills to help subordinates to establish their positive feelings and emotions in order to achieve their goals. Consequently, emotional intelligence creates enhanced performance on the part of employees (Behbahani, 2011).

Over the last two decades, there has been an increased focus on emotional intelligence research (Bar-On, 2000; Goleman, 1995; Salovey & Mayer, 1990). The term emotional intelligence was firstly defined by Salovey & Mayer (1990) 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" (p.189). After the book *Emotional Intelligence* was published by Goleman (1995), emotional intelligence became popular in field of academic psychology (Chapman, 2005).

EI was defined by Mayer & Salovey (1997) as the ability to perceive emotion, integrate emotion to facilitate thought, understand emotions, and regulate emotions to promote personal growth. This model provide that emotions carry information which contribute to how we interact with other people (Lyusin, 2006). This idea explains the meaning

of the emotions which people feel, links of people with one other and basis of decision making via using emotional data (Lyusin, 2006). Mayer et al. have developed various emotional intelligence measurement scales. The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) is the latest measurement scales developed by Mayer et al. (2002). The MSCEIT is a refined version of an earlier measure called the Multifactor Emotional Intelligence Scale (MEIS) developed by Mayer and Salovey (Mayer et al, 2003; Salovey et al, 2008). A further refined version of this measurement is the MSCEIT V2.0, which addressed and improved upon the reliability factor of the MSCEIT (Mayer et al, 2003).

The MSCEIT is composed of four factor of emotional intelligence. (Caruso et al, 2002; Mayer et al, 2003; Mayer et al, 2004; Salovey & Grewal, 2005; Mayer et al, 2008; Salovey et al, 2008). The first branch, Perceiving Emotions which is most basic aspect of emotional intelligence, is measured through questions for which participants are asked (a) to identify the emotions in faces, and (b) to identify the emotions conveyed by pictures of landscapes and other designs. (Mayer et al, 2004; Brackett & Salovey, 2006; Salovey & Grewal, 2005; Mayer et al, 2008). Perceiving emotions makes all other processing of emotional information possible (Salovey & Grewal, 2005).

The second branch of EI, Use of Emotion to Facilitate Thought, is measured by (a) sensations, in which participants compare emotions to stimuli and (b) facilitation, in which participants identify emotions facilitating a type of thinking, such as planning a birthday party (Caruso et al, 2002; Mayer et al, 2003; Mayer et al, 2004; Salovey & Grewal, 2005; Mayer et al, 2008; Salovey et al, 2008).

The third branch, Understanding Emotions, is measured by (a) changes, which tests an individual's ability to recognize changes in emotional intensity and emotional states; and (b) blend, which tests participant's ability to identify emotions that are components in more complex states (Caruso et al, 2002; Mayer et al, 2003; Mayer et al, 2004; Salovey & Grewal, 2005; Mayer et al, 2008; Salovey et al, 2008).

The fourth branch, Managing Emotions, is measured through (a) managing emotions via hypothetical scenarios which is presented participants to find out how they would maintain or change their feelings; and (b) social management which involves finding out how participants manage the emotions of others to achieve a desired outcome

(Caruso et al, 2002; Mayer et al, 2003; Mayer et al, 2004; Salovey & Grewal, 2005; Mayer et al, 2008; Salovey et al, 2008).

One of the earliest measurement of emotional intelligence through a questionnaire was developed by Cooper & Sawaf (1998). They developed an Emotional Quotient (EQ) map and Organizational EQ Profiles to measure emotional intelligence. This questionnaire contains 4 section, the first section, emotional literacy, involves questions regarding emotional honesty, energy, awareness, feedback, intuition, responsibility, and connection (Cooper & Sawaf, 1998). The second section, emotional fitness, contains questions about reliance, resilience, renewal, authentic presence and constructive discontent (Cooper & Sawaf, 1998). Third section, emotional depth, includes questions about personal power, integrity, loyalty, unique potential, purpose (Cooper & Sawaf, 1998). Fourth section, emotional alchemy, involves questions related to opportunity sensing, creating the future, intuitive flow (Cooper & Sawaf, 1998). However, the authors do not provide details of the reliability or validity of the measure.

Reuven Bar-on (1997) defines EI as “an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures” (p.14). According to Bar-On (in Van Rooyen, 2002), emotional intelligence "addresses the emotional, personal, social, and survival dimensions of intelligence" (p.19). Bar-On developed a model of emotional-social intelligence “which both stress the importance of emotional expression and views the outcome of emotionally and socially intelligent behaviour in Darwinian terms of effective adaptation” (Bar-On, 2006). This model provides the theoretical basis for the Bar-On Emotional Quotient Inventory or EQ-i (Bar-On, 2006). The EQ-i provides an estimate of emotional-social intelligence which is measured by self-report assessment of emotionally and socially intelligent behaviour. (Bar-On, 1997; Bar-On, 2000; Bar-On & Handley, 2003a, 2003b; Bar-On, 2006). The assessment contains five composite scales that involve 15 subscale scores (Bar-On, 2006). Those five components are; Intrapersonal (the ability to recognize, understand and express emotions and feelings); Interpersonal (the ability to recognize feelings in others and empathize with them); Stress Management (the ability to manage and control emotions); Adaptability (the ability to adjust to change and resolve problems); and General Mood (the ability to create positive effect and be self-motivated) (Bar-On, 2006).

According to Goleman (1995), EI is the recognition and managing of emotions within oneself and others. He interprets EI as a set of emotional characteristics including competencies, the ability to motivate oneself and the capacity to manage emotions. In this perspective, people could learn the skills in order to boost their EI. The Goleman EI model is multidimensional and consists of two main concepts. Those are social competence and individual competence. Each concept has their own components. Social competence consists of social awareness(empathy) and social skills, and individual competence consists of self-awareness, self-regulation, self-motivation (Goleman, 1995; Goleman, 1998).

According to Schutte and colleagues (1998), the most cohesive and comprehensive modes of emotional intelligence are original model of Salovey & Mayer (1990) and Mayer & Salovey (1997) revised model. Although, revised model emphasizes emotional development phases through being excellent process-oriented model, the original model of Salovey & Mayer (1990) is able to conceptualize the various dimensions of an individual's emotional development state and comprise most dimensions of other models (Schutte, et al, 1998). Thus, Schutte's Emotional Intelligence Scale (SEIS), which is self-report measure, is based on original model of EI of Salovey & Mayer (1990) (Schutte et al, 1998). In the first place, the authors generated a pool of 62 items which are based on original model. After statistical calculations, the authors found that there was four factor which had items loading at .40 and above. The first factor had a greater eigenvalue (10.79) and items loading than other factors. Also, it was observed that the first factor performed all portion of the original model of Salovey & Mayer (1990). 13 items of this 33 items of the final scale explain the appraisal and expression of emotion category of the model, 10 of the items explain the regulation of emotion category of the model and last 10 of the items explain the utilization of emotion category of the model (Schutte et al, 1998). Internal consistency showed Cronbach's alpha of .87 and .90 on two different occasions and a two-week test-retest reliability was .78 (Schutte et al, 1998).

The SEIS is unique in that it is one of the few emotional intelligence tests available for public use (Van Roy & Viswesvaran, 2007). Also, this scale is relatively brief compared with other commercial trait EI measurements, such as the Bar-On EQ-I (2006), which has 133 items, and due to this fact, there is an interest in this scale (Jonker & Vosloo, 2008). However, this scale has a lack of reverse-keyed items

(Petrides & Furnham, 2000; Saklofske et al, 2003) which could potentially lead to a deviation of SEIS score (Austin et al, 2004). Thus, Austin et al (2004) designed modified version of the SEIS containing a higher proportion of reverse-keyed items. They added some new items, mainly to target Utilisation of Emotions which has lower reliability than the other factors (Saklofske et al, 2003). A revised version of the 33-item scale of Schutte et al. (1998) was constructed in which reversed wordings were devised for nine of the original 30 forward-keyed items. In addition, eight new items were included. The resulting 41-item scale had 20 forward-keyed and 21 reverse-keyed items (Austin et al, 2004). This scale is also adapted to Turkish by Tatar et al. (2011).

3. METHODOLOGY

The aim of this study is to determine relevant group of leisure participants as “serious leisure” (SL) or “casual leisure” (CL) and to compare them with their demographic specifications, leisure satisfactions, emotional abilities, satisfactions with life and to understand the relationships between leisure participation, the leisure satisfaction, emotional intelligence and life satisfaction of the seafarers while they are on board. In this section conceptual model of study, research design, sampling strategy, characteristics of instruments and followed procedures are presented.

3.1 Conceptual Model of Study

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, 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. The long and short of it is that seafarers are inherently isolated from social world while they are serving on-board.

As already mentioned, emotional competencies (Keltner & Haidt, 2001; Lopes et al, 2004) and subjective well-being (Heinrich & Gullone, 2006; Buelga et al, 2008; Toner & Heaven, 2005; Chipuer et al, 2003) are able to break social isolation which induces human factor in marine incidents (Sampson & Thomas, 2003). It is suggested by some researchers that ordinary participation in leisure activities and positive leisure satisfaction can enhance individual emotional development by cutting back personal anxiety, depression, and anger (Dumazedier, 1967; Johnsson-Smaragdi & Jönsson, 2006; Rojek, 2010; Wu, 2010). Also, leisure activities provide physical and mental health as well as an improved social interaction, psychological security, happiness and self-esteem (Iso-Ahola, 1997; Wu, 2010).

In this context, leisure activities can break social isolation by improving the emotional intelligence and producing life satisfaction as well as health and well-being.

A review of the literature reveals that there are many research on the relationship between leisure participation and leisure satisfaction (Akyıldız, 2013; Chen et al, 2013; Huang & Carleton, 2003; Kao, 1992; Lu & Hu, 2005; Stebbins, 1997a, 1997b); leisure satisfaction and life satisfaction (Aquino et al, 1996; Griffin & McKenna, 1998; Heo & Lee, 2010; Huang & Carleton, 2003; Lapa, 2013; Nimrod, 2007; Wang et al, 2008) leisure satisfaction and emotional intelligence (Dumazedier, 1967; Johnsson-Smaragdi & Jönsson, 2006; Rojek, 2010; Wu, 2010); life satisfaction and emotional intelligence (Gannon & Ranzijn, 2005; Kong & Zhao, 2013; Landa et al, 2006; Law et al, 2008; Özer et al, 2016; Ruiz et al, 2014; Sanchez et al, 2015; Urquijo et al, 2015).

According to the relevant literature discussed in research questions and the purpose of the study, there are combined two conceptual model related to each other are drawn to investigate the relationship between leisure participation, leisure satisfaction, life satisfaction and emotional intelligence (Figure 3.1).

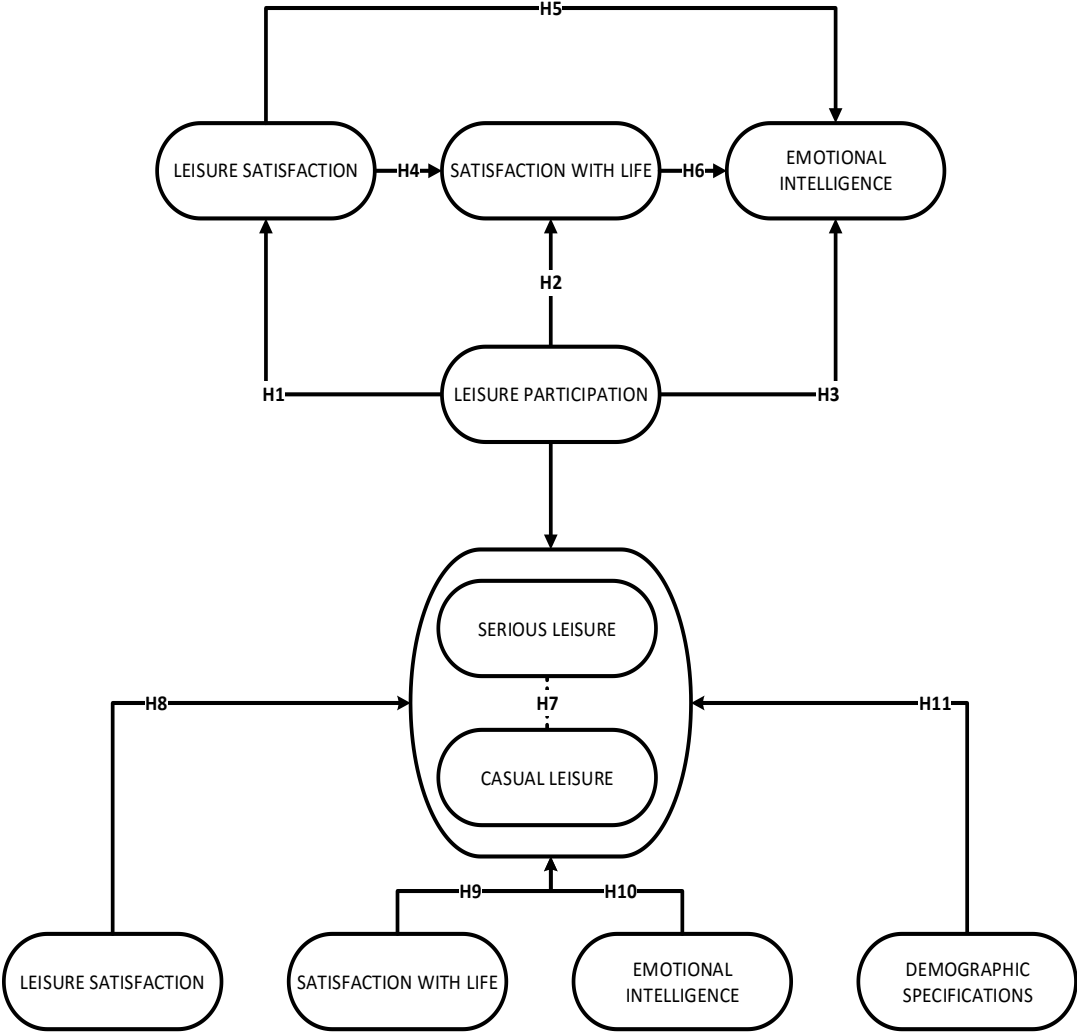


Figure 3.1 : Conceptual model of research.

3.2 Research Design

A research design is a framework for collecting data and it aims to generate significant findings with great accuracy and it is performed to test a research hypothesis, especially in quantitative researches (Creswell, 2005).

There are two types of research design which are quantitative and qualitative approaches (Gürbüz & Şahin, 2014). In this study, a quantitative research approach is employed by the agency of self-reporting questionnaire. "Quantitative research is a type of educational research in which the researcher decides what to study, ask specific, narrow questions, collects numerical data from participants, analyses these numbers using statistics, and conducts the inquiry in an unbiased, objective manner" (Creswell, 2005, p. 39). This research includes conducting descriptive statistics, cluster analysis, discriminant analysis, cross correlations and structural equation modelling as a quantitative approach. Therefore, the quantitative research design is adopted through a self-reported questionnaire to collect data about their leisure participation, leisure satisfaction, life satisfaction and emotional intelligence and to relate the relationship of these each other.

3.3 Sampling Strategy and Participants

This research study targets Turkish seafarers and uses random sampling methods. Questionnaire is applied via ITU Veti, google forms and e-mail, and research sample reach 217 Turkish seafarers from different levels of competency; 6.5% Master, 54.0% Deck off. 21.0% Engine off, 12.5% Crew, 6.0% catering crew.

3.4 The Instruments

Data has been collected by Likert type scales which are Serious and Casual Leisure Measure (SCLM), Leisure Satisfaction Scale (LSS), Satisfaction with Life Scale (SWLS) and Shutte Emotional Intelligence Scale (SEIS). Also specific demographic questions are developed to gather information about characteristics of participants.

SCLM which consists of both serious and casual leisure participation and developed by Akyıldız (2013) is used to classify leisure participants into two group as "serious" and "casual" and evaluate their participation level.

It is decided to utilize LSS based on global approach and developed by Akyildiz in order to collect information about participation level of leisure participants.

SWLS developed by Diener et al (1985) and adapted to Turkish by Durak et al (2010) is employed for the purpose of gathering data about life satisfaction of participants.

Finally, SEIS developed by Schutte et al (1998), revised as 41 items by Austin, et al (2004) and adapted to Turkish by Tatar et al (2011) is applied to evaluate emotional intelligence of seafarers.

Information about validities, reliabilities and explanations of data collection instruments are presented in subheadings.

3.4.1 Serious and casual leisure measure (SCLM)

SCLM is developed by Akyıldız (2013). SCLM consists of 42 items and has 9 factor structure. It is developed to measure level of leisure participation and to classify leisure participants into two groups as “casual leisure participant (CL)” and “serious leisure participant (SL)” (Akyıldız & Argan, 2016). This scale has answering system from 1(strongly disagree) to 5(strongly agree). In terms of reliability, the SCLM is found to have high internal consistency for whole scale .95, and for its 9 factors range from .79 to .86 and the item-total correlations are quite adequate. Besides, confirmative factor analysis shows that factor structure of SCLM is suitable (CFI=.98; GFI=.89; RMSEA=.051).

3.4.1.1 Fitness of data set

Fitness of data set is analysed in order to identify psychometric qualities of SCLM for this research sample. In this context, missing values and outliers have been defined and multicollinearity, singularity and normality tests have been conducted.

Missing values:

Missing values or missing data occur when there is no value stored for the variable in an observation. It is a common situation and they can have a significant effect on the conclusions that can be drawn from the data. All missing values are defined for all items of scale. It is observed that proportion of missing values for each items are less than 3% of the sample. Therefore, missing values are not excluded from data set and new values are assigned instead of missing values by series mean approach.

Defining outliers:

Totally 4 outliers are detected by using the rule introduced by Tukey (1977) and developed by Hoaglin & Iglewicz (1987). Presence of outliers could cause to exaggerated error rates and excessive distortions of static estimates (Zimmerman, 1994, 1998). In order to reduce effects of outliers on data set, there are three different ways; removing from data set, changing or transformation score of outliers. Due to the fact that outliers may be outside of research sample (Field & Miles, 2010), it is decided to exclude them from research data set.

Multicollinearity and singularity test:

If there is any presence of multicollinearity or singularity issue, these variables should be excluded from data set (Şekercioğlu, 2009). Multicollinearity is a strong correlation between two or more observed variables (Field & Miles, 2010). It is evaluated by the approach whether one variable is similar enough to substitute for another variable. The reference point of this correlation is $r_{xy} > .90$. If this correlation equals to $r_{xy} = 1$, problem of singularity occurs.

After conducting multicollinearity and singularity tests, it is observed that inter correlations between all variables are less than .90. Accordingly, there is no any multicollinearity and singularity issue in this data set.

Normality test:

An assessment of the normality of data is a prerequisite for many statistical tests and normal data is an underlying assumption in parametric testing (Wheeler, 2013). Therefore, before proceed with parametric tests, distribution of data should be checked. There are two main methods of assessing normality: graphically and numerically (Park, 2008). As a graphically, histograms, normal q-q plots and box pots of data should be visually checked. Numerically, according to Tabachnick & Fidell (2013), the values for skewness and kurtosis between -1.5 and +1.5 are considered acceptable to prove normal univariate and also, z-value of skewness and kurtosis (3.1) should be somewhere in the span -1.96 to +1.96 (Cramer, 1998; Cramer & Howitt, 2004; Doane & Seward, 2011). Besides, there are lots of normality tests in the literature and most efficient of them is Shapiro-Wilk's test (Shapiro & Wilk, 1965; Razali & Wah, 2011). The Shapiro–Wilk test utilizes the null hypothesis principle to

check whether a sample came from a normally distributed population. if the p-value is greater than the chosen alpha level, then the null hypothesis that the data came from a normally distributed population cannot be rejected.

$$z \text{ value} = (\textit{skewness or kurtosis}) \div (\textit{own std. error}) \quad (3.1)$$

A visual inspection of histograms, normal q-q plots and box plots shows that factors of SCLM scores are approximately normally distributed but, Shapiro-Wilk's test p values are less than 0.05 ($p < .05$). This means that null hypothesis is rejected and there is evidence that the data are not from a normally distributed population. In the case of using parametric statistics that requires normality assumption, therefore normality transformation should be conducted for scale's items (Field & Miles, 2010). Therefore, items of each factors are treated to improve normality.

There are traditional methods (e.g., power, logarithm, square root, box cox, etc.) to transform data such as power, logarithm, square root, box-cox transformations. Unfortunately, it is rare to achieve statistical normality after conducting those traditional methods (Templeton, 2011). On the other hand, there is a new and powerful approach to transform many data which is non-normally distributed into statistical normally distributed. A two-step approach developed by Templeton conducts statistically transformation with an acceptable kurtosis, skewness, and an overall normality test in many stations (2011). Although, this approach has little impact on Likert type scale, it can be applied to find out whether it is success full to treat data set, or not.

After conducting two-step data transformation for all scale items (Templeton, 2011), Shapiro-Wilk's test ($p > .05$), and a visual inspection of histograms, normal q-q plots and box plots for all factors show that all transformed scores are approximately normally distributed as shown in the Table 3.1.

3.4.1.2 Reliability of psychometric test

It is found by Akyıldız (2013) that internal consistency for whole scale is .95, and for its 9 factors are raging from .79 to .86. In this study, Cronbach-alpha internal consistency coefficient for wholesale is found .95 and values for all factors are between .76 and .95 as shown in Table 3.2. Also, Item inter correlations are quite adequate.

Table 3.1 : Descriptive items for SCLM.

Factor	μ	σ^2	σ	Skewness	Kurtosis	Shapiro-Wilk Sig.
Career	3.32	.477	.691	-.046(.165)	-.423(.329)	.357 (p>.05)
Competence	2.98	.743	.862	.067(.165)	-.321(.329)	.052 (p>.05)
Psycho-social	3.20	.472	.687	.063(.165)	-.431(.329)	.365 (p>.05)
Therapeutic	3.50	.450	.670	.087(.165)	-.399(.329)	.055 (p>.05)
Unique ethos	3.32	.374	.612	.038(.165)	-.090(.329)	.075 (p>.05)
Identity	2.97	.652	.807	.033(.165)	-.404(.329)	.089 (p>.05)
Personality	3.73	.298	.546	-.021(.165)	-.334(.329)	.122 (p>.05)
Perseverance	3.17	.554	.744	.072(.165)	-.165(.329)	.460 (p>.05)
Effort	3.11	.618	.786	.026(.165)	-.320(.329)	.195 (p>.05)

Table 3.2 : Consistency coefficients for each factors of SCLM.

	N of Item	Cronbach's Alpha(α)
Leisure career	6	.756
Sense of competence	5	.870
Psycho-social benefits	6	.849
Therapeutic benefits	5	.836
Unique ethos	4	.860
Identity	4	.884
Personality congruence	4	.823
Perseverance	4	.756
Personal effort	4	.874
Total Scale	42	.947

3.4.1.3 Confirmative factor analysis

Confirmatory factor analysis (CFA) is conducted in order to verify this one factor structure for this research sample (Schumacker & Lomax, 2004). Also, CFA is widely used for examining hypothesized relations among ordinal variables (e.g., Likert-type items) (Flora & Curran, 2004). First order and second order confirmatory factor analysis (CFA) is conducted in order to verify factor structure of SCLM reported by

Akyıldız (2013) and to evaluate scale's construct validity. Akyıldız (2013) revealed and identified nine factor solution for SCLM, defined experimental evidences of scale's construct validity and conducted first and second order confirmatory factor analysis to test factor solution, therefore in this study it is decided to evaluate first-order and higher-order CFA results to test fitness of factor structure of SCLM for this research sample (Çokluk et al, 2010).

CFA is a multivariate statistical procedure that is used to test how well the measured variables represent the number of constructs (Statistics Solutions, 2013). CFA is a sub-model of structural equation models (SEMs) and provides a powerful method for testing a variety of hypotheses about a set of observed variables (Flora & Curran, 2004). By far the most common method of estimation within CFA is maximum likelihood (ML) which is covariance based estimation (Awang et al, 2015). The assumptions of CFA with ML estimation including normality distribution, the correct a priori model specification, a sufficient sample size ($n > 200$), and data coming from random sample are ensured for this scale.

Result of first order CFA, the relationship between nine latent variables and their observed variables and factor loadings of observed variables are shown in Figure 3.2. Also, unstandardized estimates, error terms and critical ratios of observed variables are shown in Table 3.3. Standardized estimates (factor loadings) are quite adequate.

Critical ratios for all regression weights are acceptable at the 0.01 level, because all values exceed 2.56 (Hoyle, 1995). It means that observed variables statically significance to explain latent variables. Besides, all error terms shown in Table 3.3 are less than 0.90.

To determine the significance of the analyses in CFA, several statistical tests are used to identify how well the model fits to the data (Suhr, 2006). Chi-square to df ratio (χ^2/df), RMSEA, NFI, CFI, GFI, TLI model fit indices are used to determine the significance of the analyses in first order CFA.

If the chi square to df ratio or χ^2/df is less than 5, it indicates an acceptable fit between the hypothetical model and the sample data (Çokluk et al, 2010; Wheaton et al, 1977) and $\chi^2/df < 2$ indicates a perfect model fit (Tabachnick & Fidell, 2001; Çokluk et al, 2010). χ^2/df value for scale is found as 1.127 ($\chi^2=5.634$, $df=5$) and it refers to perfect model fit (Tabachnick & Fidell, 2001; Çokluk et al, 2010). Besides, absolute fit indices

(RMSEA, GFI) and relative fit indices (CFI, NFI, TLI) values are evaluated to determine model fit. While RMSEA, CFI, TLI values are significant, GFI and NFI values are less than acceptable level of .90. Results of indices are shown in Table 3.4.

As mentioned previously, several statistical tests are used to identify how well the model fits to the data in CFA (Suhr, 2006) and instead of evaluating only one or two indices, all indices should be evaluated all together to determine model fit of factor structure (Joreskog & Sorbom, 1993; Şekercioğlu, 2009). In this context, when considering values of all indices, it can be observed that results suggest generally acceptable level of good model fit and support the use of these scale in the SEM and other analyses.

Accordance with the recommendation of modification indices, seven modifications are determined to apply.

At first glance it can be easily seen that all binary modifications are under same latent variables: covariance between 5. and 7. items in “leisure career”, covariance between 34. and 36. items in “sense of competence”, covariance between 21. and 23., 24. and 25. items in of “therapeutic benefits”, covariance between 26. and 28. are in “unique ethos”, covariance between 30. and 32. items in “identity” and finally covariance between 3. and 4. Items in “perseverance”. Modifications indices provide significant contribution to χ^2 and they are in the same latent variables (Şekercioğlu, 2009), therefore it is decided to apply those modifications.

As earlier mentioned, there are experimental evidences for theoretically high-order structure of SCLM reported by Akyıldız (2013), after first-order CFA, second-order CFA is carried out to verify the link between SCLM which is main construct and its nine factors which are sub-construct of SCLM.

Second-order CFA is a statistical method set by the researcher to confirm that the theorized construct in a study loads into certain number of underlying sub-constructs or components (Zainudin, 2012).

The relationship between one exogenous latent variable, nine endogenous latent variables and their observed variables are shown in Figure 3.3. Also, unstandardized estimates, error terms and critical ratios of latent and observed variables are shown in Table 3.5. Standardized estimates (factor loadings) are quite adequate.

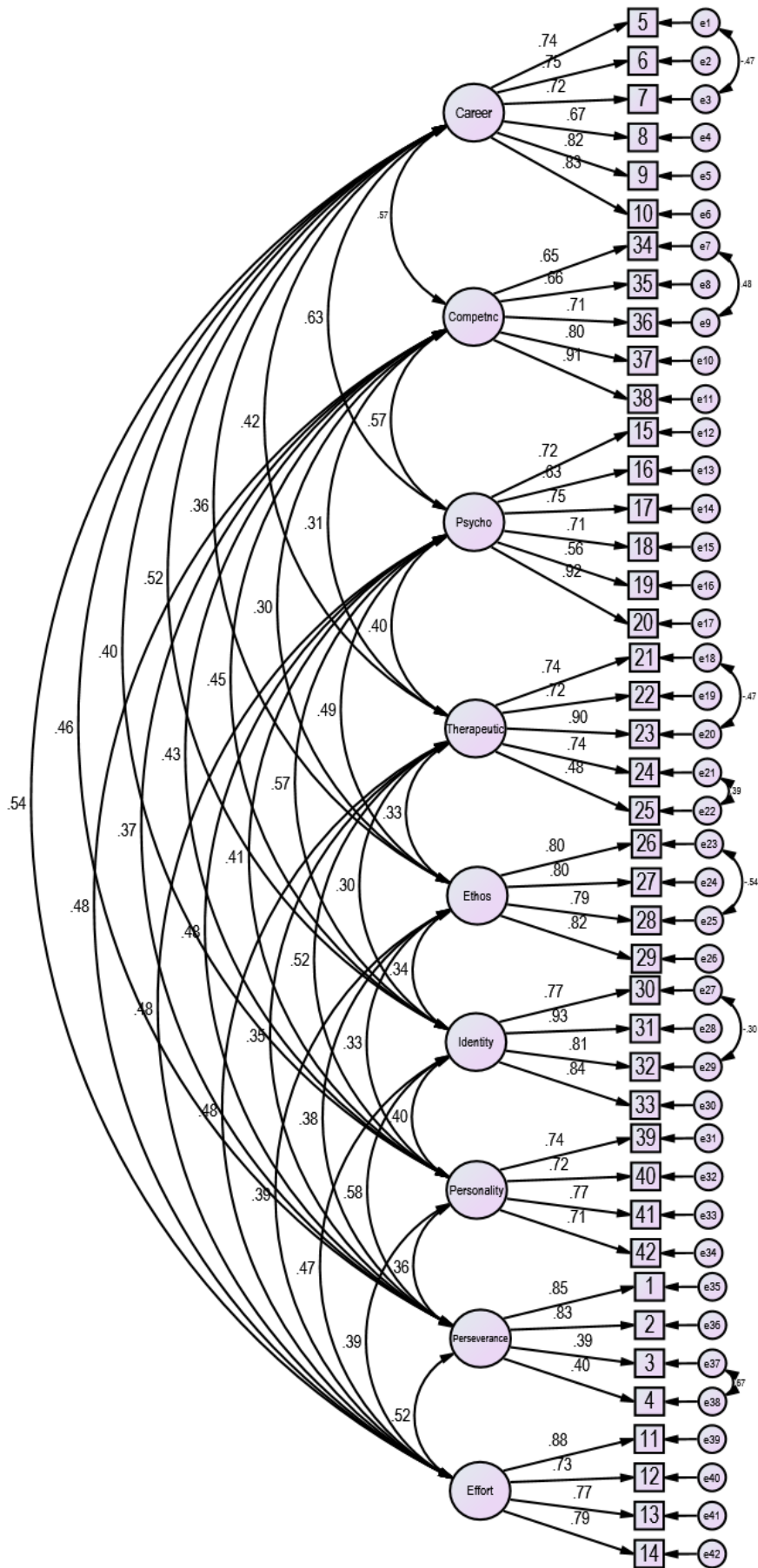


Figure 3.2 : First-order CFA of SCLM and factor loadings.

Table 3.3 : Regression weights and critical ratios for first-order CFA of SCLM.

Dependent		Independent	Estimate	S.E.	C.R.	P	Standardized
TP5	←	Career	1.044	.088	11.899	.000	.736
TP6	←	Career	.969	.078	12.431	.000	.749
TP7	←	Career	1.124	.097	11.575	.000	.722
TP8	←	Career	1.031	.095	10.800	.000	.674
TP9	←	Career	.997	.071	14.037	.000	.817
TP10	←	Career	1.000			.000*	.826
TP34	←	Competence	.722	.068	10.566	.000	.648
TP35	←	Competence	.727	.067	10.930	.000	.661
TP36	←	Competence	.820	.069	11.972	.000	.706
TP37	←	Competence	.941	.065	14.517	.000	.803
TP38	←	Competence	1.000				.909
TP15	←	Psycho Social	1.003	.078	12.921	.000	.720
TP16	←	Psycho Social	.727	.069	10.475	.000	.626
TP17	←	Psycho Social	1.028	.075	13.715	.000	.747
TP18	←	Psycho Social	1.019	.081	12.597	.000	.709
TP19	←	Psycho Social	.762	.085	8.996	.000	.559
TP20	←	Psycho Social	1.000				.922
TP21	←	Therapeutic	.831	.079	10.568	.000	.744
TP22	←	Therapeutic	.840	.074	11.378	.000	.722
TP23	←	Therapeutic	1.000				.904
TP24	←	Therapeutic	.807	.069	11.692	.000	.739
TP25	←	Therapeutic	.642	.090	7.095	.000	.481
TP26	←	Unique Ethos	.985	.079	12.491	.000	.805
TP27	←	Unique Ethos	1.196	.088	13.573	.000	.799
TP28	←	Unique Ethos	1.100	.091	12.084	.000	.786
TP29	←	Unique Ethos	1.000				.823

Table 3.3 (continued) : Regression weights and critical ratios for first-order CFA of SCLM.

Dependent		Independent	Estimate	S.E.	C.R.	P	Standardized
TP30	←	Identity	1.143	.079	14.515	.000	.766
TP31	←	Identity	1.000				.929
TP32	←	Identity	1.076	.066	16.333	.000	.814
TP33	←	Identity	1.190	.066	18.060	.000	.843
TP39	←	Personality	.851	.084	10.148	.000	.738
TP40	←	Personality	.829	.083	9.973	.000	.724
TP41	←	Personality	1.000				.768
TP42	←	Personality	.858	.088	9.778	.000	.710
TP1	←	Perseverance	1.000				.850
TP2	←	Perseverance	.934	.084	11.173	.000	.828
TP3	←	Perseverance	.460	.085	5.382	.000	.387
TP4	←	Perseverance	.454	.081	5.608	.000	.403
TP11	←	Effort	1.000				.878
TP12	←	Effort	.913	.075	12.119	.000	.726
TP13	←	Effort	.959	.073	13.165	.000	.769
TP14	←	Effort	.973	.071	13.690	.000	.791

Table 3.4 : Results of indices for first-order CFA of SCLM.

Index	Good fit	Sample statistic	Rationale
χ^2/df	$0 \leq \chi^2/df \leq 5$	1.852	Wheaton et al. (1977)
RMSEA	$0 \leq RMSEA \leq .07$	.063	Steiger (2007)
NFI	$.90 \leq NFI \leq 1.00$	.86	Steiger (2007)
CFI	$.90 \leq CFI \leq 1.00$	.90	Steiger (2007)
GFI	$.90 \leq GFI \leq 1.00$	.85	Hooper et al. (2008)
TLI	$.90 \leq TLI \leq 1.00$	.91	Hu & Bentler (1999)

Critical ratios for all regression weights are acceptable at the 0.01 level, because all values exceed 2.56 (Hoyle, 1995). It means that observed variables statically significance to explain latent variables. Besides, all error terms shown in Table 3.5 are less than 0.90.

χ^2/df , RMSEA, NFI, CFI, GFI, TLI model fit indices are used to determine the significance of the analyses in second order CFA.

χ^2/df value for scale is found as 1.856 ($\chi^2=1490.535$, $df=803$) and it refers to perfect model fit (Çokluk et al, 2010; Tabachnick & Fidell, 2001). Besides, absolute fit indices (RMSEA, GFI) and relative fit indices (CFI, NFI, TLI) values are evaluated to determine model fit. While RMSEA, CFI, TLI values are significant, GFI and NFI values are less than acceptable level of .90. Results of indices are shown in Table 3.6.

As mentioned previously, several statistical tests are used to identity how well the model fits to the data in CFA (Suhr, 2006) and instead of evaluating only one or two indices, all indices should be evaluated all together to determine model fit of factor structure (Joreskog & Sorbom, 1993; Şekerciöğlü, 2009). In this context, when considering values of all indices, it can be observed that results suggest generally acceptable level of good model fit and support the use of these scale in the SEM and other analyses.

3.4.2 Leisure satisfaction scale (LSS)

LSS is developed by Akyildiz (2013). This scale has answering system from 1 (strongly disagree) to 5 (strongly agree).

LSS consists of 5 items and provides an image for the general satisfaction with leisure. The instrument has a good reliability (Cronbach alpha = .85). Confirmative factor analysis results show that this scale has perfect factor structure (CFI=1; GFI=.99; RMSEA=.050; χ^2 : 17.99 (p=.000)).

3.4.2.4 Fitness of data set

In order to identify psychometric qualities of LSS, fitness of data sets is analysed. In this context, missing values and outliers have been defined and multicollinearity, singularity and normality tests have been conducted.

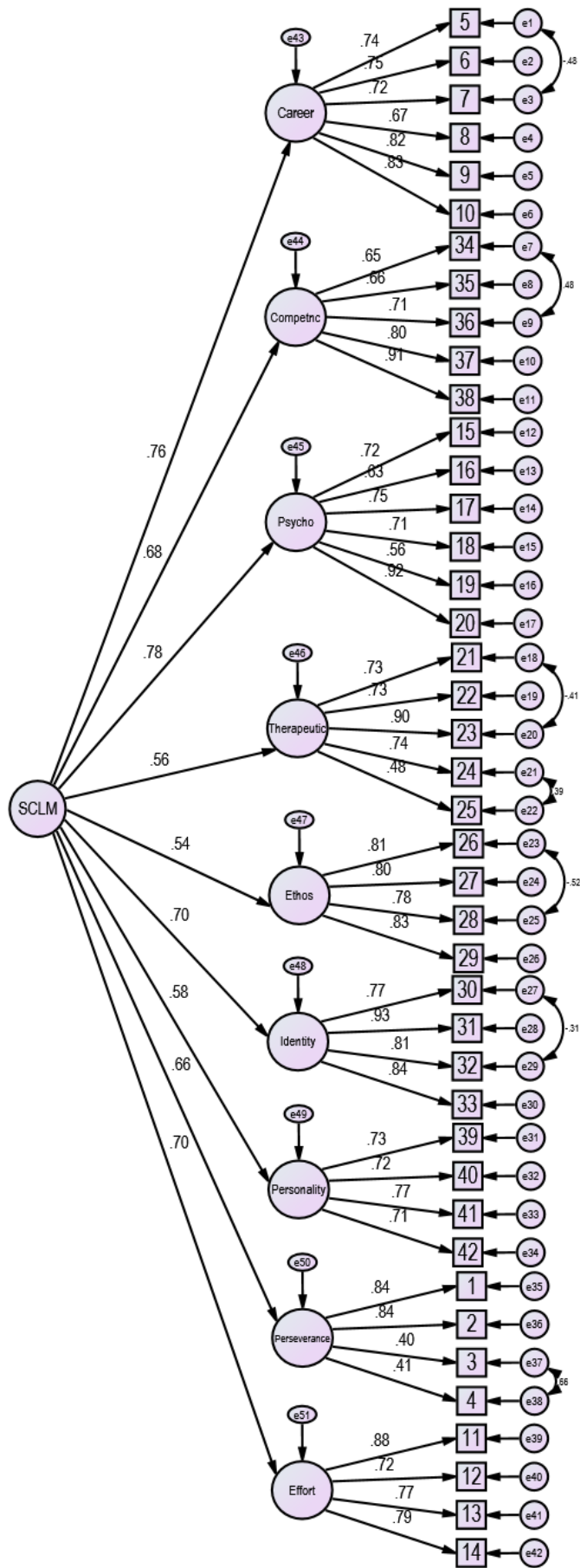


Figure 3.3 : Second-order CFA of SCLM and factor loadings.

Table 3.5 : Regression weights and critical ratios for second-order CFA of SCLM.

Dependent		Independent	Estimate	S.E.	C.R.	P	Label
Career	←	SCLM	1.000			.000	.763
Competence	←	SCLM	.902	.139	6.471	.000	.676
Psycho Social	←	SCLM	1.077	.144	7.463	.000	.785
Therapeutic	←	SCLM	.659	.110	5.993	.000	.557
Unique Ethos	←	SCLM	.569	.093	6.129	.000	.540
Identity	←	SCLM	1.100	.152	7.230	.000	.696
Personality	←	SCLM	.554	.091	6.081	.000	.583
Perseverance	←	SCLM	1.076	.157	6.871	.000	.656
Effort	←	SCLM	1.055	.139	7.612	.000	.701
TP5	←	Career	1.000				.737
TP6	←	Career	.926	.086	10.762	.000	.748
TP7	←	Career	1.081	.126	8.572	.000	.725
TP8	←	Career	.985	.102	9.646	.000	.673
TP9	←	Career	.954	.081	11.754	.000	.816
TP10	←	Career	.957	.080	11.887	.000	.825
TP34	←	Competence	1.000				.649
TP35	←	Competence	1.004	.119	8.445	.000	.660
TP36	←	Competence	1.133	.092	12.345	.000	.706
TP37	←	Competence	1.301	.132	9.873	.000	.803
TP38	←	Competence	1.383	.131	10.568	.000	.909
TP15	←	Psycho Social	1.000				.722
TP16	←	Psycho Social	.723	.081	8.878	.000	.625
TP17	←	Psycho Social	1.021	.096	10.620	.000	.745
TP18	←	Psycho Social	1.014	.100	10.096	.000	.709
TP19	←	Psycho Social	.763	.096	7.978	.000	.563
TP20	←	Psycho Social	.993	.077	12.912	.000	.921

Table 3.5 (continued) : Regression weights and critical ratios for second-order CFA of SCLM.

Dependent		Independent	Estimate	S.E.	C.R.	P	Label
TP21	←	Therapeutic	1.000				.729
TP22	←	Therapeutic	1.043	.114	9.146	.000	.730
TP23	←	Therapeutic	1.225	.118	10.355	.000	.902
TP24	←	Therapeutic	.992	.108	9.231	.000	.740
TP25	←	Therapeutic	.794	.123	6.438	.000	.484
TP26	←	Unique Ethos	1.000				.806
TP27	←	Unique Ethos	1.217	.100	12.178	.000	.802
TP28	←	Unique Ethos	1.106	.112	9.849	.000	.779
TP29	←	Unique Ethos	1.016	.081	12.522	.000	.825
TP30	←	Identity	1.000				.769
TP31	←	Identity	.872	.060	14.592	.000	.930
TP32	←	Identity	.938	.084	11.152	.000	.814
TP33	←	Identity	1.032	.079	13.140	.000	.838
TP39	←	Personality	1.000				.735
TP40	←	Personality	.975	.102	9.533	.000	.722
TP41	←	Personality	1.191	.118	10.093	.000	.775
TP42	←	Personality	1.010	.108	9.371	.000	.708
TP1	←	Perseverance	1.000				.838
TP2	←	Perseverance	.958	.090	10.690	.000	.838
TP3	←	Perseverance	.484	.087	5.544	.000	.401
TP4	←	Perseverance	.471	.083	5.694	.000	.412
TP11	←	Effort	1.000				.882
TP12	←	Effort	.905	.075	12.092	.000	.723
TP13	←	Effort	.955	.072	13.219	.000	.770
TP14	←	Effort	.962	.071	13.603	.000	.786

Table 3.6 : Results of indices for second-order CFA of SCLM.

Index	Good fit	Sample statistic	Rationale
χ^2/df	$0 \leq \chi^2/df \leq 5$	1.856	Wheaton et al. (1977)
RMSEA	$0 \leq RMSEA \leq .07$	.063	Steiger (2007)
NFI	$.90 \leq NFI \leq 1.00$	.85	Steiger (2007)
CFI	$.90 \leq CFI \leq 1.00$	.92	Steiger (2007)
GFI	$.90 \leq GFI \leq 1.00$	.86	Hooper et al. (2008)
TLI	$.90 \leq TLI \leq 1.00$	.91	Hu & Bentler (1999)

There is no detected any missing value for all items of LSS. Outliers for whole data set has been defined in previous section and they are excluded from research sample.

After conducted multicollinearity and singularity tests, it is observed that inter correlations between all variables are less than .90. Accordingly, there is no any multicollinearity and singularity issue in this data set.

A visual inspection of histograms, normal q-q plots and box plots shows that sum of LSS scores are approximately normally distributed but, Shapiro-Wilk's test p value are less than 0.05 ($p < .05$). In the case of using parametric statistics that requires normality assumption, normality transformation should be conducted for scale's items (Field & Miles, 2010). Therefore, items of scale are treated to improve normality.

After conducting two-step data transformation for all scale items (Templeton, 2011), Shapiro-Wilk's test p value is still less than 0.05 but, according to other well-known normality test which is Kolmogorov-Smirnov p value is found as 0.69 ($p \text{ value} > 0.05$), and a visual inspection of histograms, normal q-q plots and box plots show that sum of transformed scores are approximately normally distributed as shown in the Table 3.7.

3.4.2.5 Reliability of psychometric test

Internal consistency coefficient of the LSS is reported by Akyıldız (2013) as .85 for whole scale. In this study, Cronbach-alpha internal consistency coefficient for whole scale is found .83 and item inter correlations are ranging from .44 to .64 and they are quite adequate.

Table 3.7 : Descriptive items for LSS.

	Statistic	Std. Error
Mean	3.9795	
95% Confidence Interval for Mean	Lower Bound	3.8040
	Upper Bound	4.1550
5% Trimmed Mean	4.0039	
Median	4.0712	
Variance	1.721	
Std. Deviation	1.312	
Minimum	.44	
Maximum	6.23	
Range	5.79	
Interquartile Range	1.81	
Skewness	-.107	.165
Kurtosis	-.478	.329
Kolmogorov-Smirnov	Sig. = .069 (p-value>.05)	

3.4.2.6 Confirmative Factor Analysis

First order confirmatory factor analysis (CFA) is conducted in order to verify one factor solution of LSS reported by Akyıldız (2010) and to evaluate scale's construct validity (Schumacker & Lomax, 2004). Akyıldız revealed and identified single factor structure for LSS and defined experimental evidences of scale's construct validity (Çokluk et al, 2010), therefore in this conditions CFA is best chose to verify factor solution (Çokluk et al, 2010). Also, CFA is widely used for examining hypothesized relations among ordinal variables (e.g., Likert-type items) (Flora & Curran, 2004).

The relationship between five observed variables and leisure satisfaction which is latent variables and factor loadings of observed variables are shown in Figure 3.4. Also, unstandardized estimates, error terms and critical ratios of observed variables

are shown in Table 3.8. Standardized estimates (factor loadings) are between .59 and .92 and quite adequate.

Critical ratios for all regression weights are acceptable at the 0.01 level, because all values exceed 2.56 (Hoyle, 1995). It means that observed variables statically significance to explain latent variables. Besides, all error terms shown in Table 3.8 are less than 0.90.

χ^2/df , RMSEA, NFI, CFI, GFI, TLI model fit indices are used to determine the significance of the analyses in first order CFA.

χ^2/df value for scale is found as 1.175 ($\chi^2=3.524$, $df=3$) and it refers to perfect model fit. Besides, absolute fit indices (RMSEA, GFI) and relative fit indices (CFI, NFI, TLI) values suggest a good model fit and support the use of these scale in the SEM and other analyses. Results of indices are shown in Table 3.9.

Accordance with the recommendation of modification indices, one modification covariance between items 4 and 5 is determined to apply. Modifications indices provide significant contribution to χ^2 and it is in the same latent variable (Şekercioğlu, 2009), therefore it is decided to apply this modification.

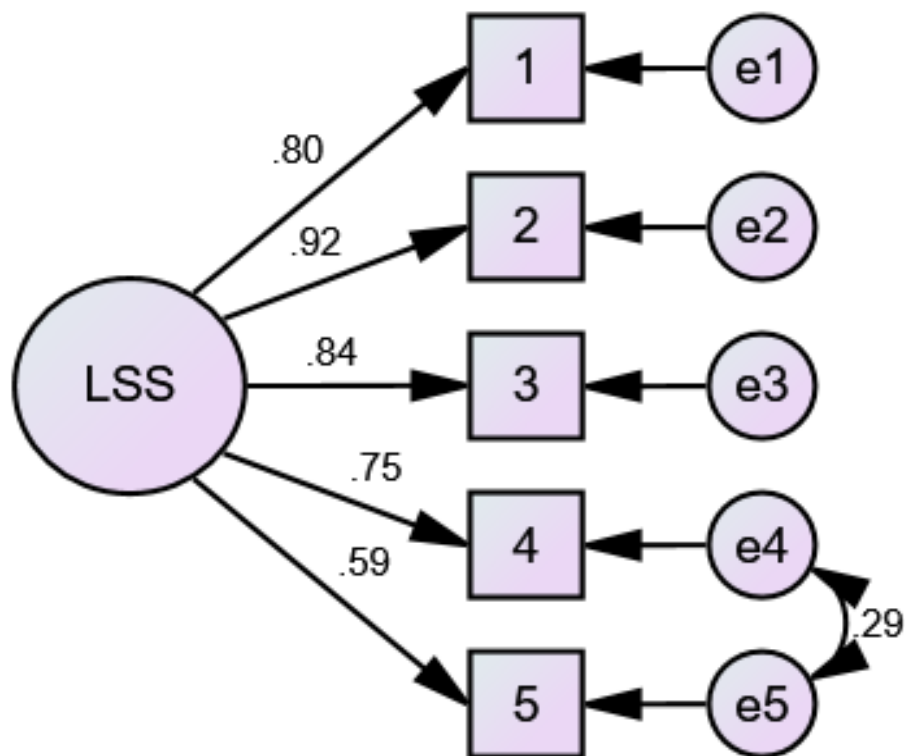


Figure 3.4 : CFA of LSS and factor loadings.

Table 3.8 : Regression weights and their critical ratios for LSS.

Dependent	Independent	Estimate	S.E.	C.R.	P	Standardized
TS1	← LSS	.794	.054	14.731	.000	.798
TS2	← LSS	1.000				.917
TS3	← LSS	.905	.057	15.810	.000	.836
TS4	← LSS	.986	.084	11.705	.000	.750
TS5	← LSS	.869	.092	9.471	.000	.591

Table 3.9 : Results of indices for CFA of LSS.

Index	Good fit	Sample statistic	Rationale
χ^2/df	$0 \leq \chi^2/df \leq 5$	1.175	Wheaton et al. (1977)
RMSEA	$0 \leq RMSEA \leq .07$	.028	Steiger (2007)
NFI	$.90 \leq NFI \leq 1.00$	.98	Steiger (2007)
CFI	$.90 \leq CFI \leq 1.00$	.98	Steiger (2007)
GFI	$.90 \leq GFI \leq 1.00$	.99	Hooper et al. (2008)
TLI	$.90 \leq TLI \leq 1.00$	.99	Hu & Bentler (1999)

3.4.3 Satisfaction with life scale(SWLS)

SWLS is developed by Diener et al. (1985) and adapted to Turkish by Durak et al. (2010). Scale consists of 5 items. Each item is answered according to 5 rated answering system (1 = strongly disagree to 5 = strongly agree). Total point of the scale can be at least 5 and at most 25.

Translation of the scale into Turkish language, validity and reliability study are done by Durak et al. (2010). In terms of reliability, the SWLS is found to have high internal consistency .81, and the item-total correlations are quite adequate. The results of the validity studies further confirm that the SWLS is suitable to use with different samples of Turkish participants, wide range from adolescents to elderly (Durak et al, 2010), (Cronbach-alpha internal consistency coefficient = .81, IFI = .994, TLI = .987, CFI = .994, RMSEA = .043).

3.4.3.7 Fitness of data set

In order to identify psychometric qualities of SWLS, fitness of data sets is analysed. In this context, missing values and outliers have been defined and multicollinearity, singularity and normality tests have been conducted.

There is no detected any missing value for all items of SWLS. Outliers for whole data set has been defined in previous section and they are excluded from research sample.

After conducting multicollinearity and singularity tests, it is observed that inter correlations between all variables are less than .90. Accordingly, there is no any multicollinearity and singularity issue in this data set.

A visual inspection of histograms, normal q-q plots and box plots shows that SWLS scores are approximately normally distributed but Shapiro-Wilk's test p-value is less than 0.05 ($p < .05$). In the case of using parametric statistics that requires normality assumption, normality transformation should be conducted for scale's items (Field & Miles, 2010). Therefore, items of scale are treated to improve normality.

After conducting two-step data transformation approach, Shapiro-Wilk's test ($p > .05$), and a visual inspection of histograms, normal q-q plots and box plots shows that the transformed SWLS scores are approximately normally distributed with a skewness of .035 (z-value of .21) and a kurtosis of -.294 (z- value of .89). as shown in Table 3.10.

3.4.3.8 Reliability of psychometric test

Internal consistency of the SWLS is reported by Diener et al. (1985) as .87. Also adapted version to Turkish language conducted by Durak et al. (2010) has an internal consistency coefficient of .81. In this study, Cronbach-alpha internal consistency coefficient for wholesale is found .83 and item inter correlations are between .50 and .73 and quite adequate.

3.4.3.9 Confirmative Factor Analysis

All researchers agree that the SWLS has only one factor (Durak et al, 2010). Confirmatory factor analysis (CFA) is conducted in order to verify this one factor structure for this research sample (Schumacker & Lomax, 2004). Factor structure of SWLS is revealed by many researchers and experimental evidences of scale's construct validity are defined in many studies, so in this conditions CFA is best chose

to verify factor solution (Çokluk et al, 2010). Also, CFA is widely used for examining hypothesized relations among ordinal variables (e.g., Likert-type items) (Flora & Curran, 2004).

Table 3.10 : Descriptive items for SWLS.

	Statistic	Std. Error
Mean	3.3547	.04335
95% Confidence Interval for Mean	Lower Bound	3.2691
	Upper Bound	3.4403
5% Trimmed Mean	3.3516	
Median	3.3673	
Variance	.410	
Std. Deviation	.64005	
Minimum	1.73	
Maximum	4.95	
Range	3.22	
Interquartile Range	.74	
Skewness	.035	.165
Kurtosis	-.294	.329
Shapiro-Wilk		Sig. = .274 (p-value>.05)

Result of first order CFA, the relationship between five observed variables and life satisfaction which is latent construct and factor loadings of measured variables are shown in Figure 3.5. Also, unstandardized estimates, error terms and critical ratios of observed variables are shown in Table 3.11. Standardized estimates (factor loadings) are between .62 and .81 and quite adequate.

The critical ratio of each parameter estimate to its standard error is distributed as a z statistic and is significant at the 0.05 level if its value exceeds 1.96 and at the 0.01 level

if its value exceeds 2.56 (Hoyle, 1995). Critical ratios for all regression weights are acceptable at the 0.01 level, because all values exceed 2.56. Besides, all error terms shown in Table 3.11 as standard error (S.E.) are less than 0.90.

To determine the significance of the analyses in CFA, several statistical tests are used to identify how well the model fits to the data (Suhr, 2006). Chi-square to df ratio (χ^2/df), RMSEA, NFI, CFI, GFI, TLI model fit indices are used to evaluate model fit of SWLS.

χ^2/df value for scale is found as 1.127 ($\chi^2=5.634$, $df=5$) and it refers to perfect model fit. Besides, absolute fit indices (RMSEA, GFI) and relative fit indices (CFI, NFI, TLI) values suggest a good model fit and support the use of these scale in the SEM and other analyses. Results of indices are shown in Table 3.12.

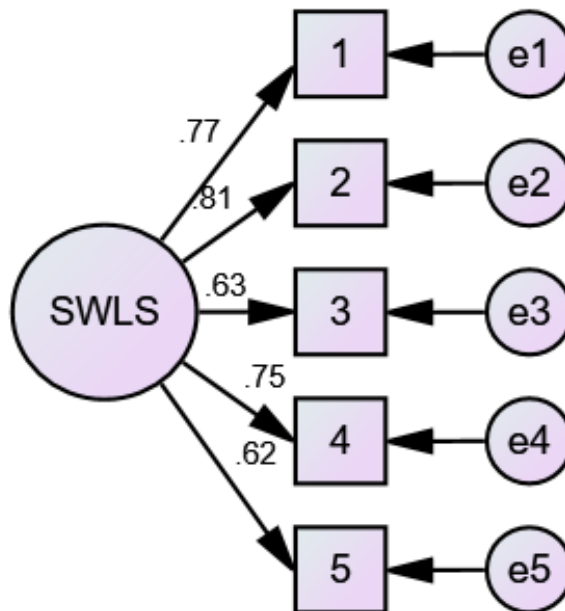


Figure 3.5 : CFA of SWLS and factor loadings.

Table 3.11 : Regression weights and their critical ratios for SWLS.

Dependent	Independent	Estimate	S.E.	C.R.	P	Standardized
1 ←	SWLS	.993	.089	11.217	.000	.767
2 ←	SWLS	1.000				.806
3 ←	SWLS	.875	.097	9.034	.000	.628
4 ←	SWLS	.969	.089	10.917	.000	.747
5 ←	SWLS	1.018	.113	8.989	.000	.625

Table 3.12 : Results of indices for CFA of SWLS.

Index	Good fit	Sample statistic	Rationale
χ^2/df	$0 \leq \chi^2/df \leq 5$	1.13	Wheaton et al. (1977)
RMSEA	$0 \leq RMSEA \leq .07$	.02	Steiger (2007)
NFI	$.90 \leq NFI \leq 1.00$	.98	Steiger (2007)
CFI	$.90 \leq CFI \leq 1.00$	.99	Steiger (2007)
GFI	$.90 \leq GFI \leq 1.00$	.99	Hooper et al. (2008)
TLI	$.90 \leq TLI \leq 1.00$	.99	Hu & Bentler (1999)

3.4.4 Schutte emotional intelligence scale revised (SEIS)

Schutte Emotional Intelligence Scale (SEIS) which is developed by Schutte et al. (1998), revised as 41 items by Austin et al. (2004), adapted to Turkish by Tatar et al. (2011). Each item is answered according to 5 rated answering system (1 = strongly disagree to 5 = strongly agree). Points can be got from the scale is at least 41 and at most 205. Relative fit index values [χ^2 (347):2647.35 ($p < .001$); GFI=.88, AGFI= .86; RMSEA= .06 and RMR= .09] are found by confirmatory factor analysis. Cronbach-alpha internal consistency coefficient for wholesale is found .89, for Optimism/Mood Regulation .75, for Utilisation of Emotions .39 and for Appraisal of Emotions .76.

3.4.4.10 Fitness of data set

Fitness of data set is analysed in order to identify psychometric qualities of SEIS for this research sample. In this context, missing values and outliers have been defined and multicollinearity, singularity and normality tests have been conducted.

In order to identify psychometric qualities of SEIS, fitness of data sets is analysed. In this context, missing values and outliers have been defined and multicollinearity, singularity and normality tests have been conducted.

Proportion of missing values for each items are less than 2% of the sample. Therefore, missing values are not excluded from data set and new values are assigned instead of missing values by series mean approach. Outliers for whole data set has been defined in previous section and they are excluded from research sample.

After conducting multicollinearity and singularity tests, it is observed that inter correlations between all variables are less than .90. Accordingly, there is no any multicollinearity and singularity issue in this data set.

Shapiro-Wilk's test ($p > .05$) for sum of whole scale items and a visual inspection of histograms, normal q-q plots and box plots shows that the SEIS scores are approximately normally distributed with a skewness of $-.114$ (z-value of $-.69$) and a kurtosis of $-.140$ (z-value of $-.43$).

Table 3.13 : Descriptive items for SEIS scales.

	Statistic	Std. Error
Mean	152.75	.04335
95% Confidence Interval for Mean	Lower Bound	150.81
	Upper Bound	154.69
5% Trimmed Mean	152.75	
Median	154.00	
Variance	209.456	
Std. Deviation	14.473	
Minimum	119	
Maximum	191	
Range	72	
Interquartile Range	17	
Skewness	-.114	.165
Kurtosis	-.140	.329
Shapiro-Wilk	Sig. = .060 (p-value > .05)	

3.4.4.11 Reliability of psychometric test

It is reported by Austin et al. (2004) that different values are found in varied researches for scale's internal consistency between .66 and .90. Besides, Austin et al. (2004) reports that three factor structure of scale has internal consistency as in order of .78, .68, .76. In this study, internal consistency coefficient for wholesale is found .854, for

Optimism/Mood Regulation .62, for Utilisation of Emotions .60 and for Appraisal of Emotions .82.

Many researchers use single factor structure and sum of all items (Bastian et al, 2005; Bauld et al, 2009; Grisham et al, 2008) due to the fact that there is no any clear factor structure reported in revised studies and SEIS has no well-defined factor solution (Gignac et al, 2005). Also, it is suggested by Schutte et al to use sum of all items as one factor solution (1998, 2002). For this reasons, it is common to use sum of SEIS's all items (Tatar et al, 2011). In this study, because of weak factor structure and aforementioned reasons it is decided to use single factor solution. The sum of all items are assigned as observed variable.

3.4.5 Demographic Survey

Participants' demographic data has been also collected. This data aims to determine if demographic factors influence the findings of the study. The demographic survey includes age, gender, marital status, educational level, seafarer certificate of competency, number of years of sea service, type of ship which they are working, frequency of doing leisure activity during sea service. Gender is categorized into male and female. Age is divided into groups as 21 (or less), 22-24, 25-27, 28-30, 31-33, 34-36 and 37 (or more). Marital status is categorized into (a) married, (b) single. Educational level is divided into (a) High School, (b) Associate degree (c) Bachelor (d) Graduate. Seafarer certificate of competency is filled in blank textbox (e.g., Oceangoing Chief Officer, Cadet, Steward, Donkeyman, etc.). Number of years of sea service is described as (a) 1 year and below, (b) 1-2 years, (c) 2-5 years, (d) 5-10 years, (e) 10 years and above. Type of ship which they are working is filled in blank textbox (e.g., Chemical Tanker, Dry Bulk Carrier, Ro-Ro Cargo, Cruise, etc.). Finally, frequency of doing leisure activity during sea service is divided into (a) A few times during sea service, (b) Once a month, (c) Several times a month, (d) Once a week, (e) Several times a week, (d) Every day.

All questionnaire is in Turkish Language and presented in Appendix.

3.5 Procedure

Cluster analysis is conducted to classify leisure participants according to sample of 217 seafarers' SCLM scores based on each factors. After cluster analysis, discriminant

analysis is applied to evaluate importance level of factors gathered from SCLM and to identify which factors make a better distinction between clusters.

In order to demonstrate the profile of clusters and to test second conceptual model of research, difference between clusters is identified by crosstabs including the level of demographics, frequency of doing leisure activities, leisure satisfaction, life satisfaction and emotional intelligence scores and chi-square analysis is utilized to recognize whether results are a statistically significant.

In this study, Structural Equation Model (SEM) with Maximum Likelihood (ML) method is used to test first conceptual model of research established 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.

4. RESULTS

This chapter includes 4 main heading. First of them is composite of findings of cluster analysis related to SCLM scale which classify leisure participants into two group as “casual” and serious”. Defining distinction level of factors accordance with cluster revealed from the previous heading’s findings is second topic (discriminant) of results. After cluster and discriminant analysis, third of them is analysing the profile of those clusters based on research topics. Final heading is to test hypothesis via Structural Equation Model (SEM) approach.

4.1 Cluster Analysis

Cluster analysis is a multivariate method which aims to classify a sample of subjects (or objects) on the basis of a set of measured variables into a number of different groups such that similar subjects are placed in the same group (Cornish, 2007).

There are a number of different methods that can be used to carry out a cluster analysis; these methods can be classified as hierarchical methods and Non-hierarchical methods (as often know as k-means clustering and fuzzy c-means clustering methods).

Sueli & Mingoti simulate 2530 data sets to find best cluster algorithm by comparison among some non-hierarchical and hierarchical clustering algorithms including SOM (Self-Organization Map) neural network and Fuzzy c-means methods (2006). The results of this study show that even in the presence of outliers and overlapping fuzzy c-means has a very good performance in all cases. On the other hand, other traditional hierarchical clustering, K-means methods or SOM neural network don’t perform well in almost all cases (Sueli & Mingoti). Thus in this research it is decided to use Fuzzy C-means method to determine clusters.

Before applying Fuzzy C-means cluster analysis, number of clusters should be defined. For this purpose, “NbClust package” (Charrad et al, 2014) is installed and utilized in latest version of R Studio. NbClust package provides 30 indices for determining the number of clusters and proposes to user the best clustering scheme from the different results obtained by varying all combinations of number of clusters, distance measures,

and clustering methods (Charrad et al, 2014). NbClust package supply many distance measures and methods to find number of clusters.

In the literature there are many proposed distance measures such as: Euclidean, Maximum, Manhattan, Binary (Charrad et al, 2014). More suitable measure should be selected to apply accordance with characteristics of the data including interval, ordinal or categorical. Euclidean distance measurement based on square distance is selected to utilize because it is the most common and powerful distance measure for interval data (Cornish, 2007; Everitt et al, 2001).

Also, there are many aggregation methods suggested in the literature such as: Ward, Single, Complete, Average, McQuitty, Median, Centroid and K-means (Charrad et al, 2014). Applying two or three of the above methods is usually a good idea. If the selected methods give same suggestion then the results will be that much more believable (Cornish, 2007). Thus, Ward and K-means methods are employed and interpreted together.

Output of NbClust is shown in Table 4.1, Also, Hubert and D indexes which are graphical method of determining the number of clusters are presented in Figure 4.1. In the plot of those indexes, algorithm seeks a significant knee (the significant peak in Hubert and D indexes second differences plot) 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 4.1 : Output of Nblcluster based on both K-means and Ward methods.

K-means	Ward
11 proposed 2 as the best number of clusters	12 proposed 2 as the best number of clusters
7 proposed 3 as the best number of clusters	6 proposed 3 as the best number of clusters
1 proposed 4 as the best number of clusters	1 proposed 5 as the best number of clusters
1 proposed 6 as the best number of clusters	1 proposed 6 as the best number of clusters
1 proposed 7 as the best number of clusters	2 proposed 7 as the best number of clusters
1 proposed 8 as the best number of clusters	1 proposed 10 as the best number of clusters
2 proposed 10 as the best number of clusters	

According to the majority rule, the best number of clusters is **2**

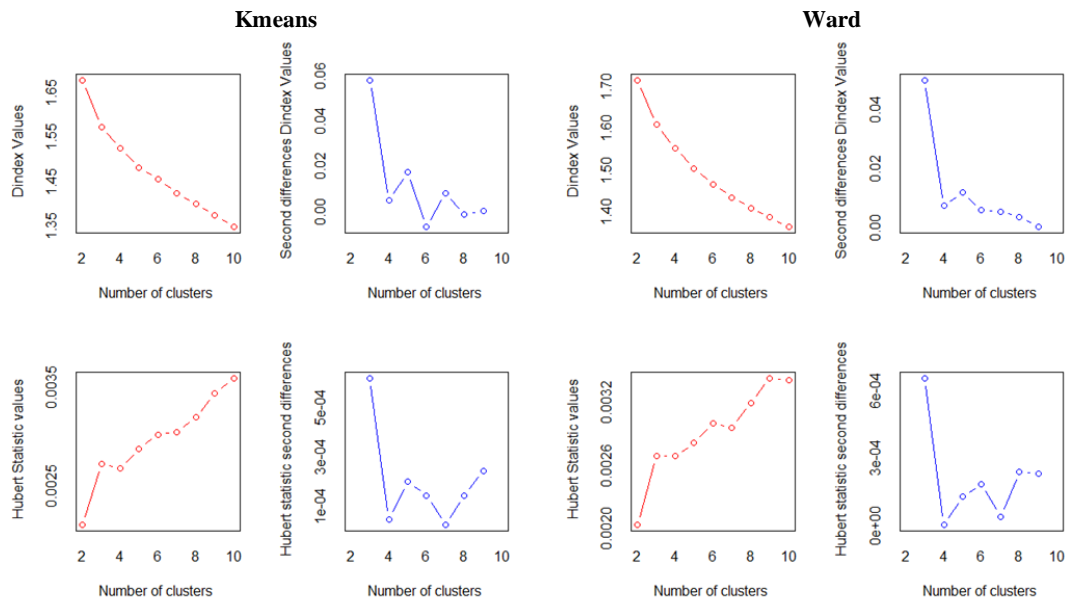


Figure 4.1 : Output of Hubert & D indexes based on Kmeans and Ward methods.

In fuzzy clustering (also referred to as soft clustering), data elements can belong to more than one cluster, and associated with each element is a set of membership levels. These indicate the strength of the association between that data element and a particular cluster. Fuzzy clustering is a process of assigning these membership levels, and then using them to assign data elements to one or more clusters.

One of the most widely used fuzzy clustering algorithms is the Fuzzy C-Means (FCM) Algorithm developed by Dunn (1973) and improved by Bezdek (1981). FCM clustering method allows piece of each variable to belong to two or more clusters. This method is frequently used in pattern recognition.

After determining best number of clusters as two, Fuzzy C-means cluster analysis has been conducted by “cmeans” command in “e1071 package” (Meyer et al, 2015) 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’ size and centers are shown in Table 4.2 and membership values of data points are presented as 3d Plots by “scatterplot3d package” (Ligges & Maechler, 2003) in R studio shown in Figure 4.2. One can easily infer that centers of cluster 1 is 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 is 108 serious and 109 casual leisure participants according to results of FCM cluster analysis.

As a result of cluster analysis, H_{40} is rejected and subsequently, the alternative hypothesis H_{4a} which refers to significant difference between SL and CL groups is found to be acceptable at the level of .01. 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.

Table 4.2 : Results of FCM cluster analysis.

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

*p <.001

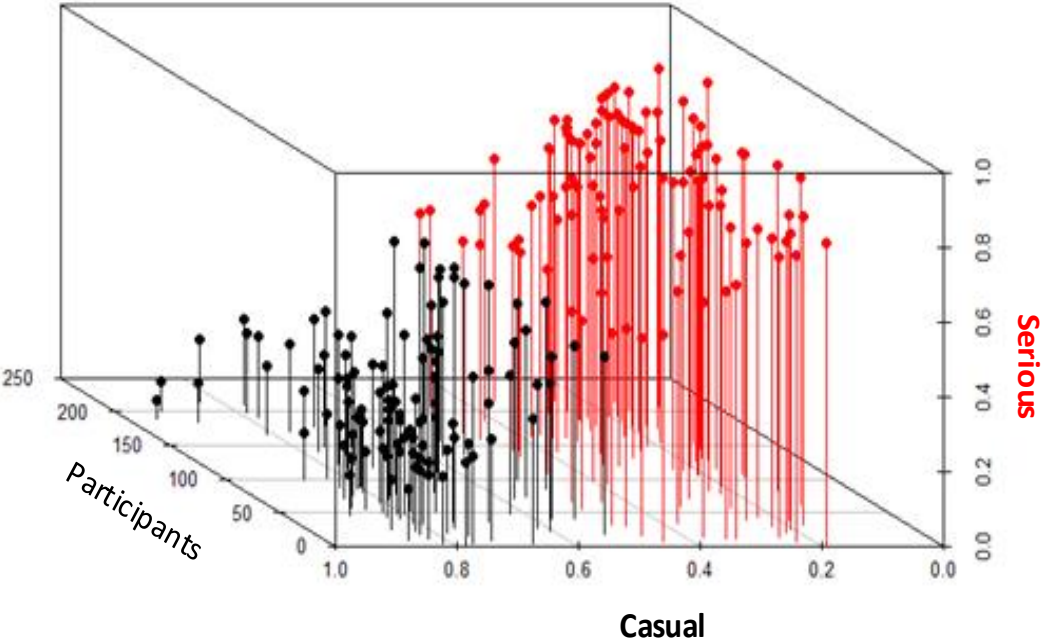


Figure 4.2 : 3D plot of cluster memberships of participants.

4.2 Discriminant Analysis

After grouping 217 participants into two cluster, discriminant analysis is applied to evaluate importance level of factors of SCLM (Çokluk et al, 2010) and to identify which factors make a better distinction between clusters (Nakip, 2006).

Discriminant analysis is a statistical analysis to estimate a categorical dependent variable (called a grouping variable) by one or more continuous or binary independent variables (called predictor variables) (Rettke et al, 2014). Discriminant function analysis is useful in determining whether a set of variables is effective in predicting category membership (Green & Salking, 2010).

Discriminant analysis is utilized if the groups are already known. There must be a score on one or more quantitative predictor measures, and a score on a group measures (Büyüköztürk & Çokluk-Bökeoğlu, 2008). In basic terms, discriminant function analysis is classification by distributing samples into groups, classes or categories of the same type.

Before the application of discrimination analysis, firstly it is required to check whether prerequisites are satisfied. Those assumptions of discriminant analysis are multivariate normality of each factors, homogeneity of covariance and absence of multicollinearity (Büyüköztürk & Çokluk-Bökeoğlu, 2008; Green & Salking, 2010).

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 (Cramer, 1998; Cramer & Howitt, 2004; Doane & Seward, 2011; Tabachnick & Fidell, 2013). Homogeneity of covariance is tested with Box's M statistic (Green & Salking, 2010). It has been suggested, however, that linear discriminant analysis be used when covariance matrices are equal, and that quadratic discriminant analysis may be used when covariance matrices are not equal (Büyüköztürk & Çokluk-Bökeoğlu, 2008).

It is observed that inter correlations between all variables for each factor are less than .90 (Çokluk et al, 2010) and accordingly, there is no any multicollinearity issue for all independent variables. It is observed that results of Box-M statistic are not significant ($F(45, 151617.327) = 1.115, p > .05$) (Table 4.3) and it means that covariance matrices are equal and there is homogeneity of covariance matrices. Thus linear discriminant analysis is conducted.

Table 4.3 : Box-M test of homogeneity of covariance matrices.

Box's M		52,508
F	Approx.	1,115
	df1	45
	df2	151830.807
	Sig.	.275

Tests null hypothesis of equal population covariance matrices.

After assumption of discriminant analysis are satisfied, linear discriminant analysis is utilized to predict a categorical dependent variable by dependent variables which are factors of SCLM. Variable of clusters found by FCM cluster analysis is assigned as dependent variables and nine factor of SCLM which are verified by CFA are assigned as independent variables.

Discriminant functions are created by linear combination of predictive one or more independent variables in discriminant analysis. Probable number of discriminant functions is equal to the number of groups minus 1 ($n_{df}=n_c - 1$) (Çokluk et al, 2010). In this case, only one discriminant function is created as a result of discriminant analysis, because dependent grouping variable has 2 clusters.

Canonical correlation, eigenvalue, Wilk's Lambda are evaluated to identify significance of linear discriminant function (Çokluk et al, 2010).

The canonical correlations of predictor variables (nine factor of SCLM) and the grouping variable (SL and CL) is measure of the strength of the overall relationships between the linear composites (canonical variates) for the independent and dependent variables (Joseph, 1992). In effect, it represents the bivariate correlation between the two canonical variates. If it is considered that set of dummy variables generated from clusters are one set of variables and discriminating variables are another set of variables, one can perform a canonical correlation analysis on these two sets. As a result of this analysis, these canonical correlations would be revealed. One can say that if the canonical correlation value r between discriminant scores on the function and each group is equal zero, there is no correlation between functions and grouping variables. The more canonical correlation means the more relationship between functions and grouping variables (Çokluk et al, 2010).

The eigenvalues which is inverse of the within and between-group sums-of-squares and cross-product matrix are associated to canonical correlations and explain level of discriminating ability of discriminant function. The magnitudes of the eigenvalues show the functions' discriminating abilities and the amount of variance shared the linear combination of variables. Although there is no absolute acceptable value for eigenvalues, more than .40 is accepted as good value (Kalaycı, 2010). There is one Wilks' Lambda value for each discriminant function (Nakip, 2006). Test of Wilks' Lambda is to check which variable has significance contribution to discriminant function and to test significance of eigenvalues statistic (Kalaycı, 2010). How much closer Wilks' lambda value is to zero shows how much the variable contributes to the discriminant function. There is also a Chi-Square statistic to test the significance of Wilk's Lambda. If the p-value is less than 0.05, one can infer that the corresponding function explains the group membership well and if this value is more than 0.05, it means that discriminant analysis is ineffective and evaluating followings is pointless and wrong (Nakip, 2006).

For research discriminant function analysis, Eigenvalue, Canonical Correlation, Wilks' Lambda and Chi-square values resulting from this research discriminant function analysis are shown in Table 4.4.

Table 4.4 : Eigenvalues & Wilks' Lambda of discriminant function.

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	Wilks' Lambda	Chi-square	df	Sig.
1	2.385 ^a	100.0	100.0	.839	.295	256.66	9	.000

a. First 1 canonical discriminant functions were used in the analysis.

It is created only discriminant function because of 2 groups structure of dependent variable. Eigenvalue of this function (2.385) explains %100 of cumulative variance and provides good discrimination. Canonical correlation value is found as .84. Square of this value ($.84^2$) shows that this model explains % 71 of variance of dependent variable and there is high relationship between discriminant function and grouping variable (Kalaycı, 2010). Wilks's Lambda value is found as .294 and accordingly Chi-square value is found as 256.66. Discriminant function is significant at the level of .00 and comments and predictions on results can be made (Nakip, 2006).

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 (Kalaycı, 2010).

As shown in Tables 4.5, Competence has the highest discriminant function coefficient and it is the most powerful variable that separates the two groups from one another. However, Personality has the lowest discriminant function coefficient and it is the weakest variable that separates the two groups from one another (Nakip, 2006).

Table 4.5: Importance of independent variables (factors).

Independent Variables	Function 1	
	Standardized Canonical Discriminant Function Coefficients	Discriminant Loadings
Career	.054	.45
Competence	.469	.55
Psycho Social	.040	.46
Therapeutic	.295	.41
Unique Ethos	.297	.37
Identity	.208	.46
Personality	.003	.30
Perseverance	.382	.58
Effort	.314	.50

Discriminant loadings in structure matrix show relationship between each independent variables and discriminant function (Çokluk et al, 2010). As shown in Table 4.5, Perseverance has the highest correlation between discriminant function. It is considered that variables which has discriminant loadings above of .30 are valid, below of 0.30 are invalid (Nakip, 2006). All this information shows that all factor loadings are above of .30 and discriminant power of all of them has significant and valid. Grouping results of discriminant analysis are shown in Table 4.6. Performance of

analysis is related to correct classification rate. The more percentage of correct grouping means the more successful analysis (Kalaycı, 2010). As shown in Table 4.6, % 97.2 (211/217) of participants are classified correctly. While 105 of serious leisure participant (%97.2) in 1. cluster is correctly estimated, 3 of them (%2.8) are wrongly predicted. 106 of casual leisure participant (%97.2) in 2. cluster is correctly estimated, 3 of them (%2.8) are wrongly predicted.

Table 4.6 : Classification results of discriminant analysis.

		Predicted Group Membership		Total	
		1	2		
Original	1	Count	105	3	108
		%	97.2%	2.8%	100%
Clusters	2	Count	3	106	109
		%	2.8%	97.2%	100%
Column Totals			108	109	217
Column Percentages			49.8%	50.2%	100%

a. 97,2% of original grouped cases correctly classified.

In order to accept results of discriminant analysis, proportion of correct classification should be more than likelihood chance criterion and maximum chance criterion (Çokluk et al, 2010; Kalaycı, 2010; Nakip, 2006).

Morrison (1969) considered the question of how well variables discriminate by formulating a likelihood ratio to estimate chance classification. This estimate of chance classification is the basis for further tests of specific relations critical to a rigorous analysis. However, expected classification, or tests involving expected classification of specific groups, are rarely reported in the literature.

Morrison's likelihood analysis provides a criterion that may be used to compare the proportion of correctly classified observations with the proportion expected by chance. This proportion, designated the proportional chance criteria, or CC_{pro} (Morrison 1969), is expressed as (4.1):

$$CC_{pro} = \rho \times \alpha + (1 - \rho) \times (1 - \alpha) \quad (4.1)$$

$$CC_{pro} = (.498)(.498) + (.502)(.502) = .500008 \cong .50$$

where, α is equal to the proportion of participants in the sample categorized as serious participant, ρ is equal to the true proportion of serious participants in the sample, $(1 - \alpha)$ is equal to the proportion of the sample classified as casual participant, $(1 - \rho)$ is equal to the true proportion of casual participants in the sample.

This likelihood analysis states that 50% of the overall sample is expected to receive correct classification by chance alone. It is observed that ratio of correct classification (97.2%) is more than expected proportional chance criterion (50%).

This relationship between chance and observed proportions can be tested using a Z statistic of the form (4.2):

$$Z = \frac{\rho_{cc} - CC_{pro}}{\sqrt{\frac{CC_{pro} \times (1 - CC_{pro})}{n}}} \quad (4.2)$$

$$Z = \frac{.972 - .500}{\sqrt{\frac{.500 \times (1 - .500)}{217}}} = 13.905988 \cong 13.9$$

where ρ_{cc} is the overall percent observations correctly classified in the sample.

As a result of Z statistic, the difference between expected and actual overall correct classification is significantly different at the .001 level. This overall test of significance suggests that further analysis should be conducted to determine the source of the divergence from chance expectations.

The analysis to determine the source of deviation is conducted using the maximum chance criterion, designated CC_{max} (Morrison 1969). CC_{max} is the minimum expected correct classification for a selected group of interest. The computation of CC_{max} is based on the assumption that all observations are categorized as coming from max. population group, given that all 217 participants are classified as casual participants, then the maximum correct classification, CC_{max} , would be expressed (4.3):

$$CC_{max} = \frac{\text{Total Casual Participants}}{\text{Total Participants}} \quad (4.3)$$

$$CC_{max} = \frac{109}{217} = .502$$

The CC_{max} result shows that proportion of correct casual participants' classification (97.2) is more than from the 50.2% maximum expected chance classification.

This relationship between chance and observed proportions can be tested using a Z statistic of the form (4.4):

$$Z = \frac{O_{cc} - CC_{max}}{\sqrt{\frac{CC_{max} \times (1 - CC_{max})}{n_{ob}}}} \quad (4.4)$$

$$z_1 = \frac{.972 - .502}{\sqrt{\frac{.502 \times (1 - .502)}{109}}} = 9,813966 \cong 9.8$$

$$z_2 = \frac{.028 - .502}{\sqrt{\frac{.502 \times (1 - .502)}{109}}} = -9,813966 \cong -9.8$$

where O_{cc} is the observed correct or incorrect classification of casual participants, n_{ob} is the number of casual participants.

Z_1 shows that observed classification is significantly greater than is expected to occur by chance classification alone. The analysis of Z_2 shows that observed and expected misclassification result differ in that casual participants are misclassified into serious group less often than expected by chance.

On the ground that proportion of correct classification (97.2%) is more than both likelihood chance criterion and maximum chance criterion, obtained discriminant function has made a correct and valid classification beyond chance (Çokluk et al, 2010).

4.3 Cross Tabs

Crosstabs are utilized to display comparison between casual and serious leisure participants depend on scores of demographics, leisure satisfaction, life satisfaction and emotional intelligence. Chi-square statistic is applied for each comparison to test significance of analysis. Findings are as shown in Table 4.7.

Table 4.7 : Relationships related to clusters.

Variables		Participants		Total	χ^2 (p)	
		Serious	Casual			
Age	21 (or less)	Count	3	2	5	7.460 (.280)
		%	2.8%	1.8%	2.3%	
	22-24	Count	41	47	88	
		%	38.0%	43.1%	40.6%	
	25-27	Count	33	20	53	
		%	30.6%	18.3%	24.4%	
	28-30	Count	16	20	36	
		%	14.8%	18.3%	16.6%	
	31-33	Count	10	8	18	
		%	9.3%	7.3%	8.3%	
	34-36	Count	2	6	8	
		%	1.9%	5.5%	3.7%	
	37 (or more)	Count	3	6	9	
		%	2.8%	5.5%	4.1%	
Sex	Female	Count	12	11	23	.059 (.491)
		%	11.1%	10.1%	10.6%	
	Male	Count	96	98	194	
		%	88.9%	89.9%	89.4%	
Marital Status	Single	Count	87	82	169	.893 (.217)
		%	80.6%	75.2%	77.9%	
	Married	Count	21	27	48	
		%	19.4%	24.8%	22.1%	
Education Status	Elementary School	Count	2	6	8	12.367 (.006)
		%	1.9%	5.5%	3.7%	
	High School	Count	11	18	29	
		%	10.2%	16.5%	13.4%	
	Degree	Count	88	66	154	
		%	81.5%	60.6%	71.0%	
	Graduate	Count	7	19	26	
		%	6.5%	17.4%	12.0%	
Competence	Catering crew	Count	6	7	13	6.456 (.168)
		%	5.6%	6.4%	6.0%	
	Crew	Count	9	20	29	
		%	8.3%	18.3%	13.4%	
	Engine off.	Count	21	25	46	
		%	19.4%	22.9%	21.2%	
	Deck off.	Count	63	51	114	
		%	58.3%	46.8%	52.5%	
	Master	Count	9	6	15	
		%	8.3%	5.5%	6.9%	
Experience	1 year(or less)	Count	37	36	73	9.934 (.052)
		%	34.3%	33.0%	33.6%	
	1-2 years	Count	11	5	16	
		%	10.2%	4.6%	7.4%	
	2-5 years	Count	28	23	51	
		%	25.9%	21.1%	23.5%	
	5-10 years	Count	29	31	60	
		%	26.9%	28.4%	27.6%	
	10 years (or more)	Count	3	14	17	
		%	2.8%	12.8%	7.8%	

Table 4.7 (continued) : Relationships related to clusters.

Variables		Participants		Total	χ^2 (p)	
		Serious	Casual			
Type of Ship	Tanker	Count	42	55	97	7.983 (.092)
		%	38.9%	50.5%	44.7%	
	Dry Bulk Carrier	Count	43	26	69	
		%	39.8%	23.9%	31.8%	
	Container	Count	13	18	31	
		%	12.0%	16.5%	14.3%	
	Ro-Ro	Count	7	9	16	
		%	6.5%	8.3%	7.4%	
	Passenger	Count	3	1	4	
		%	2.8%	.9%	1.8%	
Frequency of Doing Leisure Activity	A few times a contract	Count	0	4	4	9.666 (.085)
		%	0.0%	3.7%	1.8%	
	Once a month	Count	4	2	6	
		%	3.7%	1.8%	2.8%	
	Several times a month	Count	8	8	16	
		%	7.4%	7.3%	7.4%	
	Once a week	Count	8	14	22	
		%	7.4%	12.8%	10.1%	
	Several times a week	Count	47	54	101	
		%	43.5%	49.5%	46.5%	
Everyday	Count	41	27	68		
	%	38.0%	24.8%	31.3%		
LSS	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	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	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%		

It is found that clusters of leisure participants do not significantly differ from each other depend on demographic characteristics expect education status ($p>.05$), however, figures in crosstabs show that this distinction of education status on clusters is not clear. On the other hand, they significantly differ depend on leisure satisfaction, emotional intelligence and life satisfaction ($p<.01$). Accordingly, serious and casual participants are not different from each other depend on demographics and frequency of doing leisure activity, but they are distinct from one another based on their level of leisure satisfaction, satisfaction with life and emotional intelligence.

First of all, when distribution of clusters depend on age is analysed, it is very obvious that 22-24 age group has majority in both clusters. According to gender, number of male ($96+98=194$) is more than number of female ($12+11=23$) for each clusters. Research sample is mostly coming from seafarers who are single (77.9%), have degree level education (71%), one year experienced (33.6%) and work on tanker ship (44.7%). Participants are coming from different levels of competency; 6.5% Master, 54.0% Deck off, 21.0% Engine off, 12.5% Crew, 6.0% catering crew. 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%).

In accordance with the findings, two clusters are identified for leisure participants and difference of those two clusters from each other are explained depend on level of leisure satisfaction, emotional intelligence and life satisfaction. Serious and casual leisure participants' typologies are created in order to reveal general characteristics of leisure participants based on those differences.

Serious Leisure Participants:

When demographics of this cluster generated from serious leisure participants is analysed, it is observed that this cluster is dominantly consists of participants who are 22-24 years old (38.0%), male (88.9%), single (80.6%), have degree level education

(81.5%), work as deck officer (58.3%), one year (34.3%) and 5-10 (26.9%) experienced and work on dry bulk carrier (39.8%). Mostly, serious participants are doing their leisure activities several times a week (43.5%) and everyday (38.0%). Majority of this cluster's participants has very high level leisure satisfaction (41.7%), very high (29.6%) and high level (26.9%) emotional intelligence and very high level life satisfaction (30.6%).

Casual Leisure Participants:

When demographics of this cluster generated from casual leisure participants is analysed, in analogy to serious one, it is clear that this casual cluster is mostly consists of participants who are 22-24 years old (43.1%), male (89.9%), single (75.2%), have degree level education (60.6%), work as deck officer (46.8%), one year (33.0%) and 5-10 year (28.4%) experienced and work on tanker ships (50.5%). Mostly, casual participants are doing their leisure activities several times a week (49.5%) and everyday (24.8%). Majority of this cluster's participants has low (37.6%) and very low (35.8%) level leisure satisfaction, very low (33.0%) and low (31.2%) level emotional intelligence and low (28.4%) and medium (24.8%) level life satisfaction.

4.4 Test of Conceptual Model by SEM

Structural Equation Modelling (SEM) is a very general statistical modelling technique which provides convenient framework for statistical analysis (Hox & Bechger, 1998). SEM can be viewed as a combination of factor analysis and regression or path analysis. Theoretical constructs which are established by the latent variables are main focus of SEM. The relationships between the theoretical constructs are embodied by regression or path coefficients between the latent variables (Hasman, 2015). Also, SEM supplies covariance structure modelling which is a structure of covariance matrices between the observed variables (Hox & Bechger, 1998).

There are many statistical packages to analyse SEM. Few of them are M-plus, Lisrell, AMOS, and SAS. However, the Analysis Moment of Structure (Amos) is the most widely utilised packages since it is being distributed by an IBM, the same distributor of the main statistical software SPSS itself (Awang et al, 2015). Therefore, SEM is established in IBM SPSS Amos 23.

There are two types of SEM which are known as the Variance Based Structural Equation Modelling (VB-SEM) and the Covariance Based Structural Equation Modeling (CB-SEM) (Esposito, 2009). While CB-SEM is a parametric testing approach, VB-SEM is a non-parametric testing approach. Besides, CB-SEM is employed by the algorithm called Maximum Likelihood Estimator (MLE), whereas the other one is employed by Generalized Least Square (GLE) algorithm.

These two methods differ from each other in terms of their statistical approaches which are the non-parametric testing and the parametric testing and their employed algorithms called Generalized Least Square (GLE) and Maximum Likelihood Estimator (MLE) (Awang et al, 2015). If the research's data meet all the requirements of parametric assumptions, the finding will be meaningful by using CB-SEM rather than VB-SEM (Awang et al, 2015). On the contrary of the non-parametric procedure in VB-SEM (Ringle et al, 2010), the parametric procedures in CB-SEM depend on the assumptions such as absence of multicollinearity, adequate sample size ($n < 200$), and normality distribution of data (Awang et al, 2015).

All assumptions of CB-SEM are satisfied for each variable of conceptual model. By taking all mentioned information into consideration, Covariance Based Structural Equation Model (CB-SEM) is developed to test first conceptual model depend on 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 (χ^2/df), RMSEA, NFI, CFI, GFI, TLI model fit indices are used to evaluate model fit of established SEM.

Factor loadings of latent variables of SCLM verified by second-order confirmative factor analysis are assigned as observed variables of SCLM in SEM. SCLM is called formative construct since it is formed by 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 first conceptual model are can be explained in SEM as follows: hypotheses H₁, H₂ and H₃ are testing for casual effects and hypotheses H₄ and H₅ are intended to test the mediation effects, while another hypothesis namely H₆ is testing the moderation effect in the model.

Before testing of conceptual model, bivariate correlations with Pearson correlation coefficients between all variables are utilized. Pearson correlation measures the existence (given by a p-value) and strength (given by the coefficient r between -1 and +1) of a linear relationship between two variables. If the outcome is significant, once can conclude that a correlation exists. According to Cohen (1988) suggestion, correlations fall into three general categories, small ($|r| = .20-.29$), medium ($|r| = .30-.49$) or large ($|r| = .50-1.00$).

Results of correlation are presented in Table 4.8. There are statistical significant correlations between all variables ($p < .01$) except correlation between SWLS and Therapeutic benefit which is factor of SCLM. 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.

Table 4.8 : Correlation between all variables.

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

*. Correlation is significant at the .01 level (2-tailed).

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 4.3 and z values of variables are given in Table 4.9.

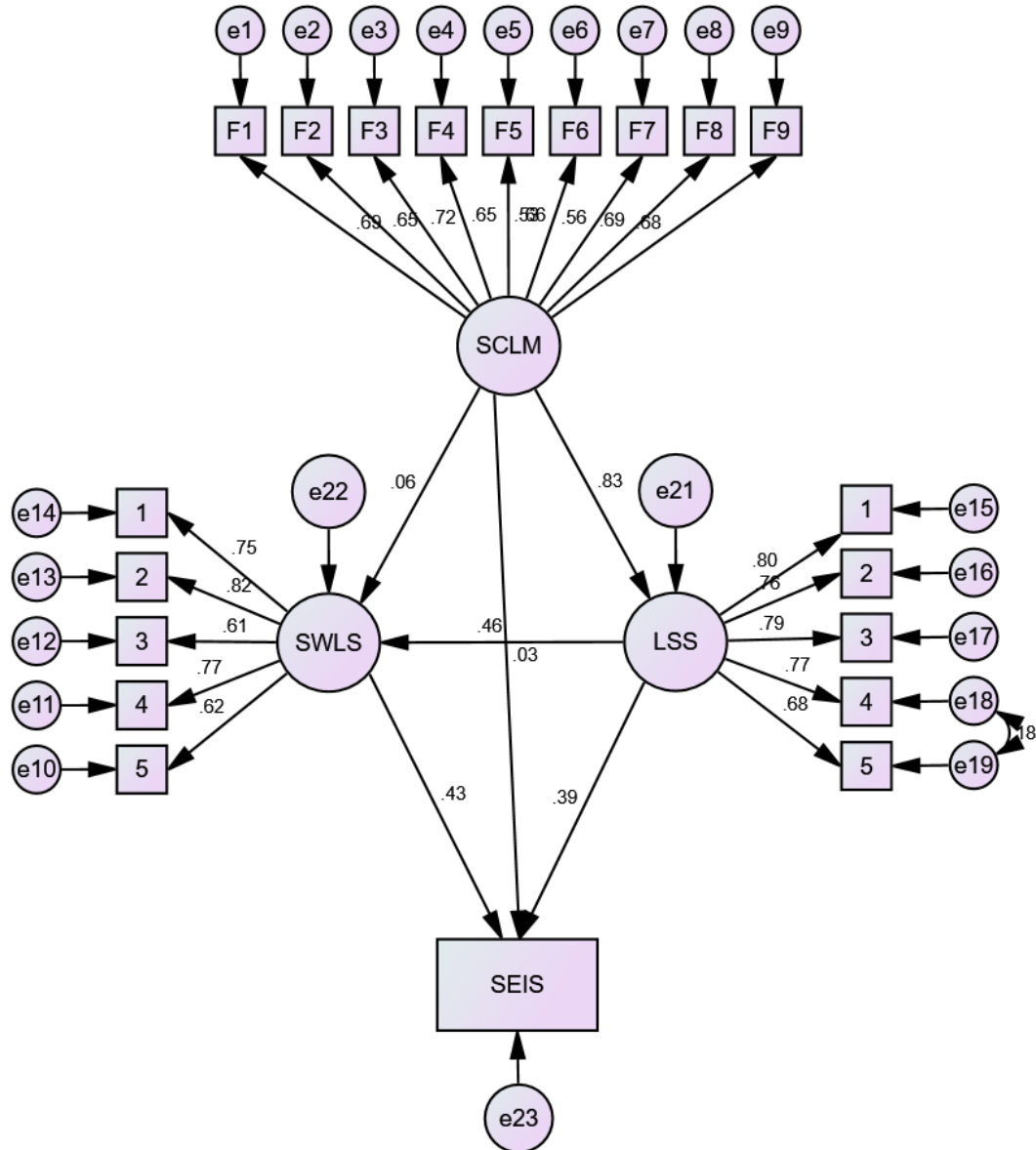


Figure 4.3 : Path coefficients of conceptual model.

Table 4.9 : Regression weights and their critical ratios of SEM.

Dependent	Independent	Estimate	S.E.	C.R.	P	Standardized
LSS ←	SCLM	.731	.081	9.010	.000*	.829
SWLS ←	LSS	.639	.236	2.709	.007**	.457
SWLS ←	SCLM	.078	.201	.389	.697	.063

Table 4.9 (continued) : Regression weights and their critical ratios of SEM.

Dependent	Independent	Estimate	S.E.	C.R.	P	Standardized
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*	.532
Identity	← SCLM	1.081	.119	9.052	.000*	.662
Personality	← SCLM	.616	.080	7.726	.000*	.556
Perseverance	← SCLM	1.040	.110	9.490	.000*	.689
Effort	← SCLM	1.080	.115	9.395	.000*	.677
TL5	← SWLS	.989	.109	9.091	.000*	.615
TL4	← SWLS	.981	.084	11.736	.000*	.766
TL3	← SWLS	.842	.093	9.033	.000*	.612
TL2	← SWLS	1.000				.817
TL1	← SWLS	.958	.084	11.462	.000*	.750
TS2	← LSS	1.000				.756
TS3	← LSS	1.041	.070	14.972	.000*	.790
TS4	← LSS	1.235	.113	10.892	.000*	.769
TS5	← LSS	1.219	.128	9.532	.000*	.680
TS1	← 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 0.001

** The probability of getting critical ratio in absolute value is less than 0.01

The critical ratio of each parameter estimate to its standard error is distributed as a z statistic and is significant at the 0.05 level if its value exceeds 1.96 and at the 0.01 level

if its value exceeds 2.56 (Hoyle, 1995). 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 0.01 level, because all values exceed 2.56 (Hoyle, 1995).

Path coefficients and regression loads related to re-established conceptual model is presented in Figure 4.4 and z values of variables are given in Table 4.10.

As a result of re-established SEM analysis, it is observed that critical ratios for all other regression weights are acceptable at the 0.01 level (Hoyle, 1995). This model is tested with model fit indices. χ^2/df value for SEM is found as 1.641 ($\chi^2=265.818$, $df=162$) and it refers to perfect model fit (Çokluk et al, 2010; Tabachnick & Fidell, 2001). 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 4.11.

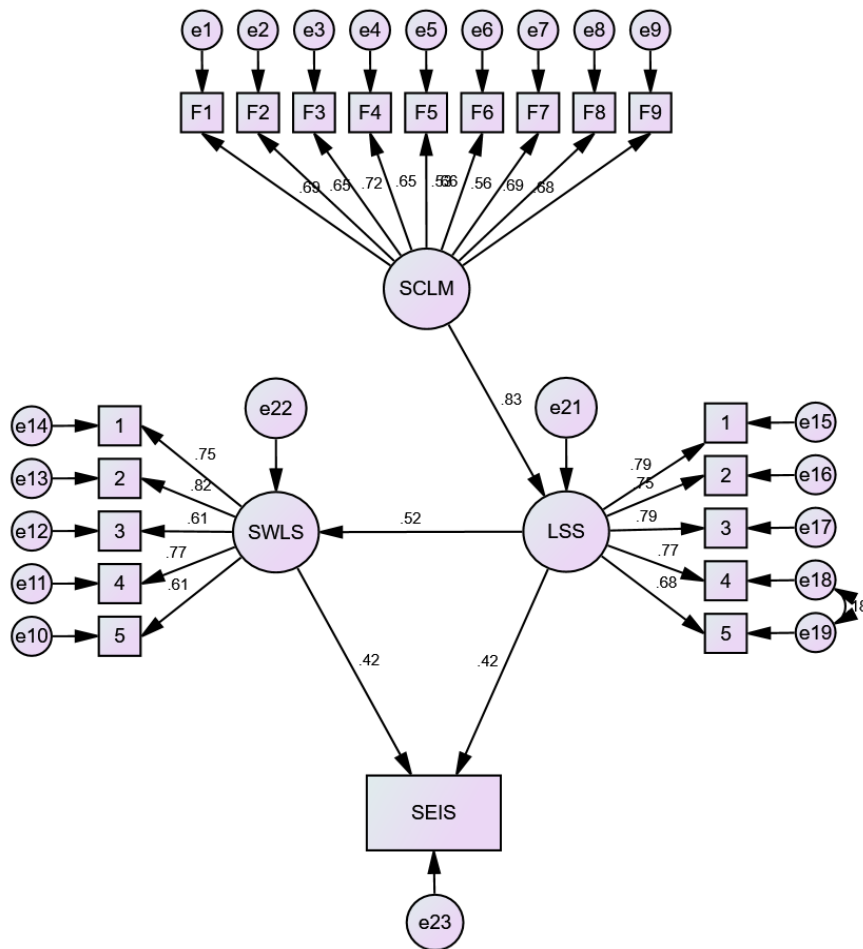


Figure 4.4 : Re-established path coefficients of conceptual model.

Table 4.10 : Regression weights and their critical ratios of re-established SEM.

Dependent	Independent	Estimate	S.E.	C.R.	P	Standardized
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*	.532
Identity	← SCLM	1.080	.120	9.033	.000*	.661
Personality	← SCLM	.618	.080	7.735	.000*	.557
Perseverance	← SCLM	1.038	.110	9.463	.000*	.687
Effort	← SCLM	1.081	.115	9.392	.000*	.677
TL5	← SWLS_	.989	.109	9.081	.000*	.615
TL4	← SWLS_	.982	.084	11.743	.000*	.767
TL3	← SWLS_	.843	.093	9.034	.000*	.612
TL2	← SWLS_	1.000				.817
TL1	← SWLS_	.958	.084	11.453	.000*	.750
TS2	← LSS_	1.000				.754
TS3	← LSS_	1.041	.070	14.959	.000*	.787
TS4	← LSS_	1.237	.114	10.882	.000*	.768
TS5	← LSS_	1.224	.128	9.549	.000*	.681
TS1	← LSS_	.966	.071	13.695	.000*	.795
EI_M	← SWLS_	.246	.040	6.213	.000*	.423
EI_M	← LSS_	.340	.056	6.031	.000*	.417

* The probability of getting critical ratio in absolute value is less than 0.001

Table 4.11 : Descriptive items for CFA of SWLS.

Index	Good fit	Sample statistic	Rationale
χ^2/df	$0 \leq \chi^2/df \leq 5$	1.632	Wheaton et al. (1977)
RMSEA	$0 \leq RMSEA \leq .07$	.054	Steiger (2007)
NFI	$.90 \leq NFI \leq 1.00$	.89	Steiger (2007)
CFI	$.90 \leq CFI \leq 1.00$	.95	Steiger (2007)
GFI	$.90 \leq GFI \leq 1.00$	.89	Hooper et al. (2008)
TLI	$.90 \leq TLI \leq 1.00$	.95	Hu & Bentler (1999)

As a result of SEM analysis, according to path coefficients and z values, H2 which is relationship between leisure participation and life satisfaction and H3 which is relationship between leisure participation and emotional intelligence are not acceptable ($p > .05$). Other conceptual hypothesizes are found acceptable at the level of 0.01 as shown in Figure 4.5.

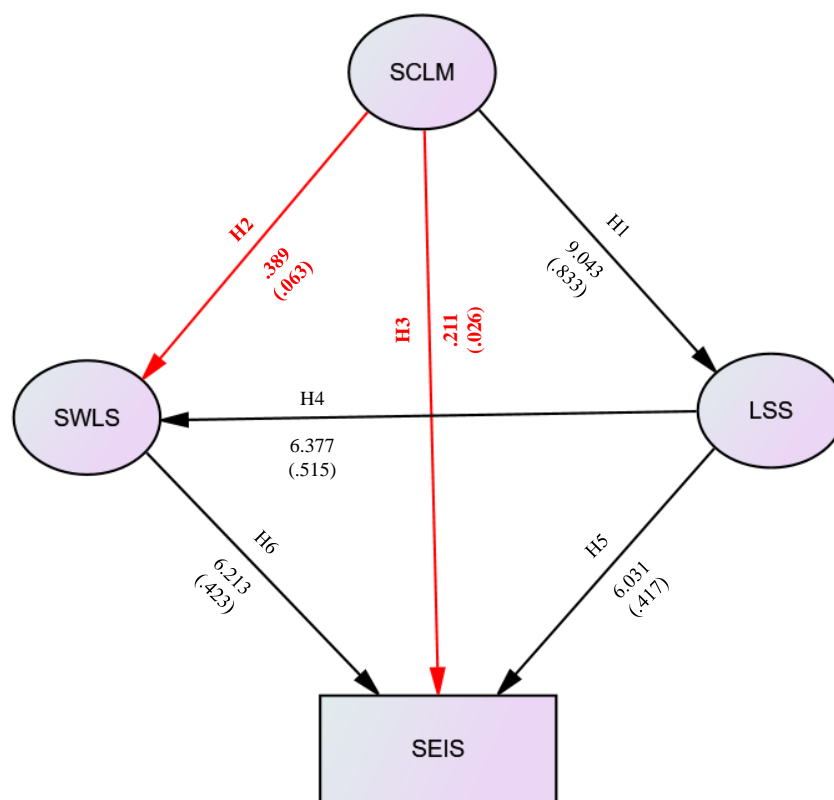


Figure 4.5 : Accepted and reject hypotheses of first conceptual model.

5. DISCUSSIONS

Generally, most of researchers have been carried out studies to measure serious leisure participation and as stated by Stebbins (1997b) casual leisure participation remain as residual position in the literature. However, Akyıldız (2013) 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.

NbClust package (Charrad etl al, 2014) is utilized via latest version of R studio in order to verify the number of cluster generated by 9 factor structure of SCLM identified as two by Akyıldız (2013). After calculations based on “Ward” and “K-means” methods and “Euclidean” distance measurement, the best number of clusters is found as two. Next, he Fuzzy C-Means (FCM) Algorithm developed by Dunn (1973) and improved by Bezdek (1981) is employed by “cmeans” command in “e1071 package” (Meyer et al, 2015) via R studio to situate participants into one of those two group which are serious and casual participation. As a result of cluster analysis it is found that 108 of seafarers are identified as “serious leisure participants” and 109 of them are identified as “casual leisure participants”.

After grouping 217 participants into two cluster, discriminant analysis is applied to identify which factors make a better distinction and whether all factors have significant discriminating between clusters. Results show that “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. Furthermore, it is observed that all factor loadings are above of .30 and discriminant power of all of them has significant and valid (Nakip, 2006).

In consequence of cluster and discriminant analysis, H_{7_0} is rejected and subsequently, the alternative hypothesis H_{7_a} which refers to significant difference between SL and CL groups is found to be acceptable at the level of .01. 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 measured by SCLM.

Difference between clusters depends on demographics, frequency of doing leisure activity, leisure satisfaction, life satisfaction and emotional intelligence are defined for the purpose of revealing characteristics of clusters and chi-square statistic is applied for each comparison to test significance of analyses.

As a result of chi-square analyses, it is observed that serious and casual leisure participants do not significantly differ from each other based on their age, gender, marital status, level of competence, experience, type of ship and frequency of doing leisure activity ($p > .05$). In demographic questions, only education status has statistical significant segregation between serious and casual participants, however figures in crosstabs show that this distinction of education status on clusters is not clear. On the other hand, they significantly differ from each other depend on leisure satisfaction, emotional intelligence and life satisfaction ($p < .01$). Accordingly, it is revealed by result of crosstabs that serious and casual participants have different characteristics and their own topology. Based on those findings, those topologies of serious and casual clusters can be summarized as follows; serious leisure participants have higher leisure satisfaction, life satisfaction and emotional intelligence than casual ones and consequently casual leisure participants have lower leisure satisfaction, life satisfaction and emotional intelligence than serious ones. Also, two clusters defined as serious and casual depending on level of leisure participation are not different from each other depend on demographics and frequency of doing leisure activity, but they are distinct from one another based on their level of leisure satisfaction, satisfaction with life and emotional intelligence. Therefore, H_{11} is rejected, however, H_8 , H_9 , H_{10} is found to be acceptable at the level of .01.

Furthermore, Structural Equation Model (SEM) with Maximum Likelihood (ML) method is used to test first conceptual model established to break social isolation of seafarers via improving emotional intelligence and boosting life satisfaction by participation in leisure activities. In this context, relationship between level of leisure participation, leisure satisfaction, life satisfaction and emotional intelligence are analysed by established model.

In literature, it is found that different leisure activities have different leisure satisfaction levels (Chen et al, 2013; Huang & Carleton, 2003; Kao, 1992; Lu & Hu, 2005; Stebbins, 1997a, 1997b) and it refers to positive relationship between leisure participation level and leisure satisfaction (Akyıldız, 2013). Thus, relationship between level of leisure participation and leisure satisfaction is included in SEM.

Participation in leisure activities is positively related to high life satisfaction, and negatively related to depression, anxiety and loneliness (Huebner et al, 2004). Leisure activity participation is predictive of better enhanced health and perceived greater life satisfaction (Menec & Chipperfield, 1997). Besides, Wu points out that there is correlation between leisure participation and emotional intelligence (2010). Also, it is suggested by some researchers that ordinary participation in leisure activities and positive leisure satisfaction can enhance individual emotional development by cutting back personal anxiety, depression, and anger (Dumazedier, 1967; Johnsson-Smaragdi & Jönsson, 2006; Rojek, 2010). Accordingly, paths among leisure participation - life satisfaction and leisure participation – emotional intelligence are established to test whether there is any direct relationship between them on the strength of findings of crosstabs.

There are numerous researches on relationship between leisure satisfaction and life satisfaction (Aquino et al, 1996; Griffin & McKenna, 1998; Heo & Lee, 2010; Huang & Carleton, 2003; Lapa, 2013; Nimrod, 2007; Wang et al, 2008). Due to this fact that regression between leisure satisfaction and life satisfaction is integrated in SEM to test this relationship for seafarers.

There are many studies in literate on relationship between leisure satisfaction and emotional intelligence (Dumazedier, 1967; Johnsson-Smaragdi & Jönsson, 2006; Rojek, 2010; Wu, 2010). Also, there are lots of research on relationship between life satisfaction and emotional intelligence (Gannon & Ranzijn, 2005; Kong & Zhao, 2013; Landa et al, 2006; Law et al, 2008; Özer et al, 2016; Ruiz et al, 2014; Sanchez et al, 2015; Urquijo et al, 2015). Therefore, relationship between leisure satisfaction and emotional intelligence and relationship between life satisfaction and emotional intelligence are tested to serve purpose of research.

As a result of test of first conceptual model by SEM, it is observed that model fit indices have acceptable level, so establish mode are verified. Two regression weights

and their critical ratio are found in not acceptable level. One of them is between leisure participation and life satisfaction and an another regression is among leisure participation and emotional intelligence. It means that there is no direct relationship between those concepts. Accordingly, H₂ which is testing for casual effects of leisure participation on life satisfaction and H₃ which is testing for casual effects of leisure participation on emotional intelligence are found not acceptable ($p > .05$).

It is found that the strongest regression weight in this model is between leisure participation level and leisure satisfaction. The standardized beta estimate for effect of SCLM on LSS is .83 with significant coefficient based on $p\text{-value} < .001$. High level of leisure participation is a predictor for high level of leisure satisfaction. There is significant positive relationship between those two variables, accordingly H₁ are found acceptable at the level of .001.

Furthermore, the standardized beta estimates are found .52 for effect of LSS on SWLS, .42 for effect of LSS on SEIS and .42 for effect of SWLS on SEIS. Those regression paths have significant coefficients based on $p\text{-value} < .001$. Consequently, H₄, H₅ and H₆ are found acceptable at the level of .001.

As a result of all findings, leisure participants can be divided into two groups as a serious and casual. Beside, seafarers' serious or casual leisure participation makes a difference regarding leisure satisfaction, satisfaction with life and emotional intelligence. This study figures out significant difference among seafarers with serious leisure participation and ones with casual leisure participation. Thus the serious leisure participants have more emotional intelligent and more satisfaction with their leisure time and their life than casual ones. Furthermore, there are positive relationship between leisure participation, leisure satisfaction, life satisfaction and emotional intelligence among seafarers. In order to enhance the seafarers' emotional intelligence and satisfaction with life, the leisure and recreational facilities both on-board and onshore should be provided them. In addition, specific training programs for encouraging seafarers to participate recreational and leisure activities could be conducted by authorities.

6. CONCLUSIONS

One can conclude that high level of leisure participation of seafarers is correlated with a positive attitude toward leisure satisfaction, satisfaction with life and emotional intelligence. The results show that the serious leisure participants have more leisure satisfaction than causal ones, and it produces more satisfaction with life and more emotional intelligence.

It is found in this study that seafarers who possess high level of leisure satisfaction with serious participation have also high emotional intelligence and satisfaction with life. Furthermore, there has been conducted many studies that show positive relation between work performance and emotional intelligence (Carmeli, 2003; Rosete & Ciarrochi, 2005; O'Boyle et al, 2011). In addition, high level of satisfaction with life refers to meaningful life, well-being and brings out work performance (Diener et al., 1985; Ignat & Clipa 2012).

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.

There is also obtained from some researches that there are benefits of providing good accommodation and recreational facilities from the perspective of the company (Ellis & Sampson, 2013). Progoulaki & Roe (2011) suggest 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" (p. 20).

By considering all steps, one can easily obtain that there a lot of benefits of leisure time activities for both seafarers and maritime companies. 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.

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APPENDICES

APPENDIX A: Serious and Casual Leisure Measure

APPENDIX B: Leisure Satisfaction Scale

APPENDIX C: Satisfaction with Life Scale

APPENDIX D: Turkish Version of Adapted Shutte Emotional Intelligence Scale

APPENDIX E: Codes for cluster analysis in R Studio

APPENDIX A

Table A.1 : Serious and Casual Leisure Measure.

	Kesinlikle Katılmıyorum	Katılmıyorum	Ne Katılmıyorum Ne Katılmıyorum	Katılıyorum	Kesinlikle Katılıyorum
1-Yoğun olsam bile seçtiğim serbest zaman etkinliğine katılırım.	(1)	(2)	(3)	(4)	(5)
2-Yorgun olmama rağmen seçtiğim serbest zaman etkinliğine katılırım.	(1)	(2)	(3)	(4)	(5)
3-Seçtiğim etkinliğin zorluklarıyla ısrarla başa çıkarırım.	(1)	(2)	(3)	(4)	(5)
4-Seçtiğim etkinlik ile ilgili engellerle karşılaşsam bile üstesinden gelmek için mücadele ederim.	(1)	(2)	(3)	(4)	(5)
5-Seçtiğim etkinlikte kendimi artık daha bilgili hissediyorum.	(1)	(2)	(3)	(4)	(5)
6-Seçtiğim etkinlikte gelişme gösterdiğimi hissediyorum.	(1)	(2)	(3)	(4)	(5)
7-Bu etkinlik ile ilgili çeşitli başarılarla imza attığımı düşünüyorum.	(1)	(2)	(3)	(4)	(5)
8-Bu etkinlikte nasıl daha iyi olabilirim diye düşünüyorum.	(1)	(2)	(3)	(4)	(5)
11-Seçtiğim etkinlik ile ilgili kitap, Cd vb. materyaller alırım.	(1)	(2)	(3)	(4)	(5)
12-Seçtiğim etkinlik ile ilgili kendimi geliştirmek için çok çalışırım.	(1)	(2)	(3)	(4)	(5)
13-Seçtiğim etkinlik ile ilgili daha fazla bilgi sahibi olabilmek için çeşitli kaynaklardan araştırmalar yaparım.	(1)	(2)	(3)	(4)	(5)
14-Seçtiğim etkinlik ile ilgili daha iyi olabilmek için zaman harcarım.	(1)	(2)	(3)	(4)	(5)
15-Bu etkinliğe dâhil olduğumdan beri özgüvenim arttı.	(1)	(2)	(3)	(4)	(5)
16-Bu etkinliğe ilgi duyan diğer kişiler ile arkadaşlıklar kuruyorum.	(1)	(2)	(3)	(4)	(5)
17-Bu etkinliğe dâhil olmak belli bir sosyal statü kazandırıyor.	(1)	(2)	(3)	(4)	(5)
18-Bu etkinlik sayesinde sosyal çevrem genişliyor.	(1)	(2)	(3)	(4)	(5)
19-Bu etkinlik ile bilinen biri olmak beni mutlu ediyor.	(1)	(2)	(3)	(4)	(5)
20-Bu etkinliğe ait bir grubun parçası olmak beni mutlu ediyor.	(1)	(2)	(3)	(4)	(5)
21-Bu etkinliğe katılmak bana mutluluk veriyor.	(1)	(2)	(3)	(4)	(5)
22-Bu etkinlikle kendimi yenilenmiş hissediyorum.	(1)	(2)	(3)	(4)	(5)
23-Bu etkinlik psikolojik olarak kendimi daha iyi hissetmemi sağlıyor.	(1)	(2)	(3)	(4)	(5)
24-Bu etkinlik sayesinde stresten uzaklaşıyorum.	(1)	(2)	(3)	(4)	(5)
25-Bu etkinlik esnasında kendimi farklı bir dünyadaymış gibi hissediyorum.	(1)	(2)	(3)	(4)	(5)
26-Bu etkinliğe ilgi duyan kişilerle benzer fikirlere sahibim.	(1)	(2)	(3)	(4)	(5)
27-Bu etkinliğe ilgi duyan kişilerle ortak düşüncelere sahibim.	(1)	(2)	(3)	(4)	(5)
28-Bu etkinliğe ilgi duyan kişilerle ortak değerlere sahibim.	(1)	(2)	(3)	(4)	(5)
29-Bu etkinliğin diğer katılımcıları ile benzer mantaliteye (hayat görüşü, düşünce tarzı vb.) sahibim	(1)	(2)	(3)	(4)	(5)
30-Seçtiğim bu etkinliğin yerini hiçbir serbest zaman aktivitesi tutamaz.	(1)	(2)	(3)	(4)	(5)
31-Beni tanıyan herkes, bu etkinliğin beni ben yapan şeylerden biri olduğunu bilir.	(1)	(2)	(3)	(4)	(5)
32-Bu etkinliğe olan tutkum ile tanınan biriyimdir.	(1)	(2)	(3)	(4)	(5)
33-Bu etkinlik neredeyse hayatımın merkezinde yer alıyor.	(1)	(2)	(3)	(4)	(5)
34-Bu etkinliğe katılmak belli bir düzeyde yetenek gerektiriyor.	(1)	(2)	(3)	(4)	(5)
35-Bu etkinliğe katılmak istekli olmayı gerektiriyor.	(1)	(2)	(3)	(4)	(5)
36-Bu etkinliğe katılmak belli bir düzeyde beceri gerektiriyor.	(1)	(2)	(3)	(4)	(5)
37-Bu etkinliğe katılmak belli bir düzeyde bilgi sahibi olmayı gerektiriyor.	(1)	(2)	(3)	(4)	(5)
38-Bu etkinliğe katılmak etkinliğe ilişkin belli bir düzeyde yeterlilik hissi gerektiriyor.	(1)	(2)	(3)	(4)	(5)
39-Bu etkinliğin benim kişiliğime uyduğunu düşünüyorum.	(1)	(2)	(3)	(4)	(5)
40-Bu etkinliğin karakter yapıma uygun bir etkinlik olduğunu düşünüyorum.	(1)	(2)	(3)	(4)	(5)
41-Bu etkinliğin kişiliğimle örtüşdüğünü düşünüyorum.	(1)	(2)	(3)	(4)	(5)
42-Kişiliğime uymasa bu etkinliğe katılmaya devam edemezdim.	(1)	(2)	(3)	(4)	(5)

* Serious and Casual Leisure Measure is developed by Akyıldız (2013)

APPENDIX B

Table B.1 : Leisure Satisfaction Scale.

	Kesinlikle Katılmıyorum	Katılmıyorum	Ne Katılıyorum Ne Katılmıyorum	Katılıyorum	Kesinlikle Katılmıyorum
1-Seçtiğim serbest zaman etkinliğine katılmaktan memnunum.	(1)	(2)	(3)	(4)	(5)
2-Seçtiğim serbest zaman etkinliğinden gerçekten hoşlanıyorum.	(1)	(2)	(3)	(4)	(5)
3-Bu etkinliğe katılmaktan zevk alıyorum.	(1)	(2)	(3)	(4)	(5)
4-Bu etkinlikten beklediklerimin karşılığını alıyorum.	(1)	(2)	(3)	(4)	(5)
5-Bu etkinliğin beklediğimden daha da eğlenceli bir aktivite olduğunu düşünüyorum.	(1)	(2)	(3)	(4)	(5)

* Leisure Satisfaction Scale is developed by **Akyıldız** (2013)

APPENDIX C

Table C.1 : Satisfaction with Life Scale.

	Kesinlikle Katılmıyorum	Katılmıyorum	Ne Katılıyorum Ne Katılmıyorum	Katılıyorum	Kesinlikle Katılmıyorum
Pek çok açıdan ideallerime yakın bir yaşamım var.	(1)	(2)	(3)	(4)	(5)
.....	(1)	(2)	(3)	(4)	(5)
.....	(1)	(2)	(3)	(4)	(5)
Şimdiye kadar, yaşamda istediğim önemli şeyleri elde ettim.	(1)	(2)	(3)	(4)	(5)
.....	(1)	(2)	(3)	(4)	(5)

* Satisfaction with Life Scale is developed by Diener et al (1985) and adapted to Turkish by **Durak, M., Senol-Durak, E., & Gencoz, T.** (2010).

APPENDIX D

Table D.1 : Turkish Version of Adapted Schutte Emotional Intelligence Scale.

	Kesinlikle Katılmıyorum	Katılmıyorum	Ne Katılmıyorum Ne Katılmıyorum	Katılıyorum	Kesinlikle Katılmıyorum
1-Kişisel sorunlarımı başkaları ile ne zaman paylaşacağımı bilirim.	(1)	(2)	(3)	(4)	(5)
2-Bir sorunla karşılaştığım zaman benzer durumları hatırlar ve üstesinden gelebilirim.	(1)	(2)	(3)	(4)	(5)
3-Genellikle yeni bir şey denerken başarısız olacağımı düşünürüm.	(1)	(2)	(3)	(4)	(5)
4-Bir sorunu çözmeye çalışırken ruh halimden etkilenmem.	(1)	(2)	(3)	(4)	(5)
5-Diğer insanlar bana kolaylıkla güvenirler.	(1)	(2)	(3)	(4)	(5)
6-Diğer insanların beden dili, yüz ifadesi gibi sözel olmayan mesajlarını anlamakta zorlanırım.	(1)	(2)	(3)	(4)	(5)
7-Yaşamımdaki bazı önemli olaylar neyin önemli neyin önemsiz olduğunu yeniden değerlendirmeme yol açtı.	(1)	(2)	(3)	(4)	(5)
8-Bazen konuştuğum kimsenin ciddi mi olduğunu yoksa şaka mı yaptığını anlayamam.	(1)	(2)	(3)	(4)	(5)
9-Ruh halim değiştiğinde yeni olasılıkları görürüm.	(1)	(2)	(3)	(4)	(5)
10-Duyularımın yaşam kalitem üzerinde etkisi yoktur.	(1)	(2)	(3)	(4)	(5)
11-Hissettiğim duyguların farkında olurum.	(1)	(2)	(3)	(4)	(5)
12-Genellikle iyi şeyler olmasını beklemem.	(1)	(2)	(3)	(4)	(5)
13-Bir sorunu çözmeye çalışırken mümkün olduğunca duygusalıktan kaçınırım.	(1)	(2)	(3)	(4)	(5)
14-Duyularımı gizli tutmayı tercih ederim.	(1)	(2)	(3)	(4)	(5)
15-Güzel duygular hissettiğimde bunu nasıl sonlandıracağımı bilirim.	(1)	(2)	(3)	(4)	(5)
16-Başkalarının hoşlanabileceği etkinlikler düzenleyebilirim.	(1)	(2)	(3)	(4)	(5)
17-Sosyal yaşamda neler olup bittiğini sıklıkla yanlış anlarım.	(1)	(2)	(3)	(4)	(5)
18-Beni mutlu edecek uğraşlar bulmaya çalışırım.	(1)	(2)	(3)	(4)	(5)
19-Başkalarına gönderdiğim beden dili, yüz ifadesi gibi sözsüz mesajların farkındayım.	(1)	(2)	(3)	(4)	(5)
20-Başkaları üzerinde bıraktığım etkiyle pek ilgilenmem.	(1)	(2)	(3)	(4)	(5)
21-Ruh halim iyiye sorunların üstesinden gelmek benim için daha kolaydır.	(1)	(2)	(3)	(4)	(5)
22-İnsanların yüz ifadelerini bazen doğru anlayamam.	(1)	(2)	(3)	(4)	(5)
23-Yeni fikirler üretmem gerektiğinde duygularım işimi kolaylaştırmaz.	(1)	(2)	(3)	(4)	(5)
24-Genellikle duygularımın niçin değiştiğini bilmem.	(1)	(2)	(3)	(4)	(5)
25-Ruh halimin iyi olması yeni fikirler üretmeme yardımcı olmaz.	(1)	(2)	(3)	(4)	(5)
26-Genellikle duygularımı kontrol etmekte zorlanırım.	(1)	(2)	(3)	(4)	(5)
27-Hissettiğim duyguların farkındayım.	(1)	(2)	(3)	(4)	(5)
28-İnsanlar bana, benimle konuşmanın zor olduğunu söylerler.	(1)	(2)	(3)	(4)	(5)
29-Üstlendiğim görevlerden iyi sonuçlar alacağımı hayal ederek kendimi güdülerim.	(1)	(2)	(3)	(4)	(5)
30-İyi bir şeyler yaptıklarında insanlara iltifat ederim.	(1)	(2)	(3)	(4)	(5)
31-Diğer insanların gönderdiği sözel olmayan mesajların farkına varırım.	(1)	(2)	(3)	(4)	(5)
32-Bir kişi bana hayatındaki önemli bir olaydan bahsettiğinde ben de aynısını yaşamış gibi olurum.	(1)	(2)	(3)	(4)	(5)
33-Duyularımda ne zaman bir değişiklik olsa aklıma yeni fikirler gelir.	(1)	(2)	(3)	(4)	(5)
34-Sorunları çözüm biçimim üzerinde duygularımın etkisi yoktur.	(1)	(2)	(3)	(4)	(5)
35-Bir zorlukla karşılaştığım zaman umutsuzluğa kapılırım çünkü başarısız olacağıma inanırım.	(1)	(2)	(3)	(4)	(5)
36-Diğer insanların kendilerini nasıl hissettiklerini sadece onlara bakarak anlayabilirim.	(1)	(2)	(3)	(4)	(5)
37-İnsanlar üzgünken onlara yardım ederek daha iyi hissetmelerini sağlarım.	(1)	(2)	(3)	(4)	(5)
38-İyimser olmak sorunlar ile baş etmeye devam edebilmem için bana yardımcı oluyor.	(1)	(2)	(3)	(4)	(5)
39-Kişinin ses tonundan kendini nasıl hissettiğini anlamakta zorlanırım.	(1)	(2)	(3)	(4)	(5)
40-İnsanların kendilerini neden iyi ya da kötü hissettiklerini anlamak benim için zordur.	(1)	(2)	(3)	(4)	(5)
41-Yakın arkadaşlıklar kurmakta zorlanırım.	(1)	(2)	(3)	(4)	(5)

* SEIS is developed by is Schutte et al (1998), revised by Austin et al (2004), adapted to Turkish by **Tatar, A., Tok, S., & Saltukoğlu, G.** (2011).

APPENDIX E

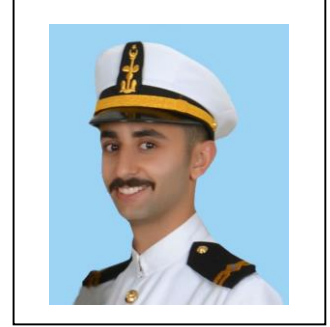
Table E.1 : Codes for cluster analysis in R Studio.

```
library(XLConnect)
M <- readWorksheet(loadWorkbook("Excell.xlsx"), sheet=1)
x<-cbind(M$F1, M$F2, M$F3, M$F4, M$F5, M$F6, M$F7, M$F8, M$F9)
library(NbClust)
set.seed(10)
coun_cl1=NbClust(x, distance = "euclidean", min.nc = 2, max.nc = 10, method = "kmeans",
                 index="all")
coun_cl1=NbClust(x, distance = "euclidean", min.nc = 2, max.nc = 10, method = "ward.D2",
                 index="all")

library(e1071)
set.seed(15)
cl<-cmeans(x, 2,20, dist = "euclidean", method = "cmeans",m=2)
s3d <- scatterplot3d(cl$membership, color=cl$cluster, type="h",box = TRUE, angle=315,
                    scale.y=0.9,pch=16, main="Cluster")

cl$size
cl$centers
cl$membership
```

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PUBLICATIONS, PRESENTATIONS AND PATENTS ON THE THESIS:

- Gökçek, V., Tavacıoğlu, L., 2015: An Investigation for the Relationship Between the Emotional Intelligence, Life Satisfaction and Leisure Time Satisfaction of Serious and Casual Participants Among Seafarer - IAMU 16th AGA, October 07-10, 2015 Opatija, Croatia.