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Tourism Yield and Sustainability: An Exploratory Perspective for the Fjord Norway Region

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Abstract

“For the output of an economy to be sustainable it must generate sufficient income to meet all costs of production and make investment such that at least a constant stock of capital is maintained” (Becken & Simmons, 2008, p. 421). From this perspective, are the environmental costs and the ecological capital considered? The dynamics of the current economies and the pressures on achieving higher profitability have conducted to the industries in general; and the tourism industry in particular to ignore environmental-sustainability issues. According to *The Living Planet Report 2008*, the sustainability concept is one of the drivers for the solution of the ecological overshoot (WWF, 2008). The consumption of the *Biocapacity* has become a major concern due to the unbalances between the supply of ecological capital and the demands from the economic activities. Since the tourism sector is an ecological capital industry consumer, the knowledge conception around the environmental-sustainability assessment is crucial for the industry’s sustainability. From an exploratory tourism yield assessment in the Fjord Norway Region, we found that the visitors’ demand represented about 17% of the ecological supply whereas the demand over the *Biocapacity* was increased due to the visitors’ shock producing an overshoot of 57%. It represented a negative effect that in the absence of tourism would not occur. It implied that if the population’s demands (summed to the visitors’ demand) continues at the same rate, it will be required the equivalent of half of the Fjord Norway Region to maintain the registered level of lifestyle consumption. Consequently, there is a necessity to develop equilibrium models to maximize the tourism industry’s profitability ensuring that the ecological capital remains productive indefinitely for the wellbeing of future generations.

Table of Contents

List of Tables and Figures.....	8
INTRODUCTION.....	11
<i>Literature Review</i>.....	13
Introduction.....	13
Justification of the Literature Review	13
Methodology and Organization of the Literature Review	13
Yield Management: Traditional approach	14
<i>Supply and Demand</i>	16
<i>The Tourism Market</i>	18
<i>Consumption behavior and price analysis.</i>	18
<i>Price and quality relationship.</i>	19
<i>Segmentation and positioning.</i>	20
<i>Assessing Tourism Impacts</i>	22
<i>TSA and CGE models.</i>	23
<i>Characteristics of the CGE model.</i>	25
<i>The CBA, I-O and MR analysis.</i>	27
<i>The multiplier impact analysis.</i>	28
<i>Yield Management and the Cultural Component</i>	30
<i>Yield Management and Sustainability: The Transition</i>	31
<i>Social responsibility and the transition.</i>	32
<i>The transition to a multi- dimensional perspective.</i>	32
<i>The role of stakeholders in the transition process.</i>	33
<i>Limitations of YM in macro-applications.</i>	34

<i>Modeling the sustainability</i>	35
Yield Management and Sustainability: A Wider Approach	36
<i>The Tourism Yield Concept</i>	36
<i>Tourism Industry Strategies and Sustainability</i>	37
<i>Generating synergy for the tourism industry strategy</i>	39
<i>Positioning and visioning strategies</i>	40
<i>Tourism yield and marketing strategies</i>	41
<i>Differentiation and quality strategies</i>	43
<i>Tourism yield and marketing: a driven sector perspective</i>	43
Tourism Yield Assessment	45
<i>The Environmental Component</i>	46
<i>Sustainability Assessment</i>	48
<i>Alternative Sustainability Assessment Methodologies</i>	50
<i>Environmental Sustainability</i>	52
<i>The ecological footprint concept</i>	52
<i>Environmental sustainability and macroeconomic analysis</i>	53
<i>Socio-Cultural Sustainability</i>	55
<i>Conclusions</i>	56
Method	57
Design	57
Data Collection	58
<i>Survey: Your Trip to Fjord Norway</i>	58
<i>Participants</i>	58
<i>Design and Procedure</i>	58
Tourism Yield Assessment in the Fjord Norway Region	60

<i>Definitions</i>	60
<i>The Multiplier Assessment</i>	61
<i>Tourism Yield and Sustainability Analysis</i>	61
<i>The Fjord Norway Sustainability Model</i>	62
<i>Study Case: Fjord Norway Region</i>	64
Culture and Nature.....	64
Regional Industry.....	67
<i>Hordaland</i>	67
<i>Rogaland</i>	67
<i>Sogn og Fjordane and Møre og Romsdal</i>	67
Tourism industry in the Fjord Norway Region.....	68
<i>Tourism Infrastructure</i>	68
<i>Data Analysis and Discussion</i>	74
Tourism Yield Analysis in Fjord Norway.....	74
Tourism Yield and Sustainability	75
Tourism Yield Impact on Fjord Norway’s Biocapacity.....	76
Fjord Norway Sustainability Model.....	76
Marketing Analysis: Relationship Quality/satisfaction vs. Segmentation.....	86
<i>Quality/satisfaction vs. Purchasing Power Profile</i>	86
<i>Quality/satisfaction vs. Age Profile</i>	87
<i>Quality/satisfaction vs. Level of Education Profile</i>	88
<i>Quality/satisfaction vs. Nationality Profile</i>	88
<i>Quality/satisfaction vs. Gender Profile</i>	89
Marketing Analysis: Visitors’ Economic Injections	90
<i>Visitors’ Expenditures vs. Purchasing Power Profile</i>	90

Limitations 115

Survey: Your Trip to Fjord Norway 116

***Conclusions and Recommendations* 117**

 Tourism Yield Assessment and the Optimization Model 118

 Tourism Yield: A Marketing Analysis..... 120

 Final Remarks 121

***References* 122**

***Appendices*.....128**

List of Tables and Figures

Table 1 Protected Areas under the Cultural Heritage Act, 2008	66
Table 2 Employment in Tourism Industries Period 2000-2006	71
Table 3 Open Hotel & Similar Accommodation Establishments in Fjord Norway Region	72
Table 4 Utilization of Beds in Hotels and Similar Establishments in Fjord Norway Region during the period 2005-2009	73
Table 5 Fjord Norway Value Added Period 2000-2006 (mill. NOK, current prices)	78
Table 6 Fjord Norway Tourism Shock and Multiplier Impact Analysis on Macroeconomic Variables	79
Table 7 Comparison of Biocapacity and Ecological Footprint Overshoot (per capita)	80
Table 8 Norway and Fjord Norway Region Biocapacity	81
Table 9 Fjord Norway Tourism Shock Impact on the Ecological Overshoot	82
Table 10 Tourism Industry and Rest of Industries' Yield in Fjord Norway Region, Subject to Resources Constraints	83
Table 11 Decision Variables and Fjord Norway Yield Contribution Annually	84
Table 12 Linear Programming Model and Objective Function for the Maximization of the Fjord Norway Region Yield	85
Table 13 Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Purchasing Power Profiles	92
Table 14 One-Way Analysis of Variance (ANOVA): Fjord Norway Quality's Rate vs. Visitors' Purchasing Power Profiles	93
Table 15 Test of Between-Subjects Effects: Fjord Norway Quality's Rate vs. Visitors' Purchasing Power Profiles	94
Table 16 Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Age Profiles	96
Table 17 One-Way Analysis of Variance (ANOVA): Fjord Norway Quality's Rate vs. Visitors Age Profiles	97

Table 18 Test of Between-Subjects Effects: Fjord Norway Quality's Rate vs. Visitors' Age Profiles	98
Table 19 Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Educational Level Profiles	100
Table 20 One-Way ANOVA: Fjord Norway Quality's Rate vs. Visitors' Educational Level Profiles	101
Table 21 Test of Between-Subjects Effects: FN Quality's Rate vs. Visitors' Educational Level Profiles	102
Table 22 Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Nationality Profile	103
Table 23 Levene's Test: Fjord Norway Quality's Rate vs. Visitors' Nationality Profile	104
Table 24 Test of Between-Subjects Effects: Fjord Norway Quality's Rate vs. Visitors' Nationality Profile	105
Table 25 Independent Sample t-Test: Fjord Norway Quality's Rate vs. Visitors' Gender Profile	106
Table 26 Independent Sample t-Test: Fjord Norway Quality's Rate vs. Visitors' Gender Profile	107
Table 27 Descriptive Statistics: Visitors' Environmental Expenditures vs. Purchasing Power Profile	108
Table 28 Descriptive Statistics: Visitors' Cultural Expenditures vs. Purchasing Power Profile	109
Table 29 Descriptive Statistics: Visitors' Social Expenditures vs. Purchasing Power Profile	110
Table 30 One-Way ANOVA: Visitors' Expenditures vs. Purchasing Power Profile	111
Table 31 Test of Between-Subjects Effects: Environmental Expenditures vs. Purchasing Power Profile	112
Table 32 Test of Between-Subjects Effects: Cultural Expenditures vs. Purchasing Power Profile	113

Table 33 Test of Between-Subjects Effects: Social Expenditures vs. Purchasing Power Profile	114
Figure 1 Fjord Norway Gross Value Added	70
Figure 2 Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Purchasing Power Profile	91
Figure 3 Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Age Profile	95
Figure 4 Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Education Profile	99

INTRODUCTION

The economic boom experienced by Norway since the oil discovery in the late seventies has brought to the debate the necessity to develop other industries in order to diversify and thus reduce inherent risks in the local economy. The so-called Dutch Disease concept that explains the relationship between the boom of natural resources (oil) and the falling in a subjacent industry sector (Gjedrem, 2005), describes this phenomenon. Under this concept, the Norwegian oil boom can be affecting other economic sectors. Naturally, the oil industry in Norway is absorbing labor force and capital in a larger proportion than the non-flourishing industries. Another possible negative effect in macro terms is the rationalization of capital inflows. In other words, the FDI (Foreign Direct Investment) would perceive volatility in the Norwegian economy due to dependence on the oil revenues producing finance rationalization.

Additionally, the Norwegian consumption goes in an important proportion to the pension expenditures. Considering that the health care and pension expenditures will rise while the prices of oil will eventually decrease, the Norwegian government requires finding alternative income channels. The solution seems to signal in the direction of the service sector.

During the peak of the global financial crisis in 2008 there were voices pointing out the importance of the service sector as an economic counterweight assuming its contra cyclical properties. Policymakers present this sector as an economic variable that contributes to minimize the effects during recessive periods in a local economy (Cooper, 2008). Additionally there are other considerations over the macroeconomics view that support the idea that investment over the service sector in general, and in particular in the touristic sector; could have an important impact over the Norwegian economy (Sørensen & Whitta-Jacobsen, 2005).

Thus, the tourism industry emerges as an alternative income channel for the mentioned challenges in the Norwegian economy. Consequently, it raises many questions: how to boost the Norwegian tourism industry? And which are the tools and strategies to evaluate and optimize the current industry performance? Likewise, how to make the industry sustainable in a long-term view?

Tourism Yield appears as the concept that could help to answer some of the questions previously described. This concept has been defined by a variety of studies as the gains (economic and non-economic) obtained by the tourism industry, which benefits a community in the environmental, social and cultural levels.

With this in mind, the following research seeks to examine the tourism yield issues from a study case methodology. This implies to explore the costs and benefits involved as well as to propose economic tools, indicators and strategies in order to measure and boost the tourism yield in the Norwegian communities in particular, and in the Norwegian tourism industry in general.

The Fjord Norway study case aim to serve as the knowledge conception, platform and model of application to the rest of the communities in terms of tourism yield.

The following study case research intends to serve as a device which:

- Explores, describes, explains and suggests tools to generate sustainability and enhancement of yield in the Norwegian tourism industry.
- Works as a theory builder in terms of tourism yield applied in the Norwegian communities
- In a second phase, will function as a tester of the theory creation by applying it in a real life context

Literature Review

Introduction

The purpose of this literature review is to examine the studies conducted on tourism yield assessment and its impacts over a community in terms of social, environmental, and cultural issues. Due to the short life of the tourism yield research, we intended to explore a reconceptualization of the tourism yield by providing new approaches from the fields of macroeconomics, sustainable economics and tourism yield impact analysis on socio-cultural and environmental contexts. Therefore the following literature review is an up-to-date oriented research that tries to identify gaps in the tourism yield's research and encourage discussion about shifts and arguments of others on the topic.

Justification of the Literature Review

In order to understand, analyze, and most importantly, to answer the unknowns around the tourism yield and sustainability throughout the following thesis, it is crucial to conduct the presented body of research.

Methodology and Organization of the Literature Review

The body of the literature review seeks to analyze the tourism yield using a *methodological approach* (Lapan & Quartaroli, 2009). The reason why we have selected this method is because it evaluates the effectiveness of different approaches, procedures or tools as well as to suggest insights in terms of tourism yield. The election and classification of the literature review was made according to the following parameters: level of rigor, reliability, level of validation and generalizability. The parameter of time of the following literature review is on the horizon of 10 years, this is because of the relative incipient stage of the tourism yield research. In general, the present literature review includes quantitative, qualitative and peer

reviewed studies with the intention to examine the role of the tourism yield on a community. In particular, it will help to identify different approaches, covering mainly:

- The traditional *Yield Management* concept and,
- The new tourism yield approach

Yield Management: Traditional approach

The Yield Management (YM) concept has been described traditionally as a tool that helps to the management to optimize profits. Accordingly, the yield concept is known as the economic gain, marginal contribution, or profit. During the optimization, the management faces different types of constraints related to the production or creation of products and services. Those constraints in general can be classified as the factors of production: land, capital and labor. However, constraints can vary depending on the economic activity, business or production. The optimization is achieved when the economic activity process its inputs in the best efficient manner such that maximizes outputs or profits. In simple words, YM refers to the basics of productivity, a relationship where inputs are manipulated in an efficient way to achieve the highest output.

According to one source, the definition of the yield concept is commonly used in agriculture and finance fields. It refers to the amount of something (money) obtained per unit of capacity (hectare or dollar), but for their study purposes the authors define yield as the return in dollar terms per unit of capacity (Scott & Breakey, 2007). Accordingly, Lee-Ross and Johns (referred in Scott & Breakey, 2007) define YM as a procedure that is used by service organizations to maximize revenue under conditions of fluctuating demand and where the product is perishable. Kimes as cited also in Scott & Breakey, 2007) explain some of the

conditions inherent to YM. These are: the fixed capacity condition, the inventory is perishable, customer can be segmented or classified, the demand is variable, and the product is sold in advance of use.

However, there are many perspectives around the YM definition. Jauncey, Mitchel and Slamet (referred in Okumus, 2004) describe the YM as an integrated, continuous and systematic approach to maximizing revenues through the manipulation of product's price in response to a forecasted demand. Poater and Garriga (2009) define YM as the tradeoff between pricing and capacity; while Kimes (referred in Okumus, 2004) says that YM is the method that can assist an organization to sell the right inventory to the right type of customer, at the right time, and for the right price. In this sense, YM has been successfully adopted by the Airlines industry while managing the revenue per seat mile (Yeoman & Ingold, 1997).

Okumus (2004) reported that in the service industries managing demand is important because the capacity should be fully utilized. Okumus also explains that in an airplane, an empty seat represents an opportunity cost due to the perishable nature of the service. The marginal cost of selling another seat is less than the marginal revenue. Thus, there is the incentive to sell more seats at discount rates as long as the revenue is greater than the cost of the service (Okumus, 2004)

In a more systematic perspective, Jones and Hamilton (as cited in Okumus, 2004) proposed a seven-step yield implementation model in hospitality organizations:

- Develop a yield culture
- Analyze the demand

- Establish the price-value relationships
- Create appropriate market segments
- Analyze pattern of demand
- Track declines and denials
- Evaluate and revise the system

Other authors such as Yeoman and Ingold (1997) go forward and introduce the YM into the strategic field. They state that Yield can be defined as the revenue per inventory unit even though; this perception of yield is limited to economic entities that depend of constraints in their capacity. The authors establishes that YM is not based upon market power equilibrium, but on an inequality between large sellers and small or independent buyers who can be induced to buy when business is soft, or forced to pay a higher price when business is good. This approach evidences the necessity of cooperation mechanisms between industry operators and demanders. In the next section, the lector will be introduced to the fundamentals of the supply and demand in the YM context.

Supply and Demand

The relationship between supply and demand has been studied by different authors when analyzing YM. For example, Uner, Kose, and Gokten (2008) used an econometric model and YM theory to identify determinants of supply and demand. From the demand side, the authors analyze the tourist arrivals and the price rates (as an independent variable). The research intends to reduce the gap between demand and supply in order to achieve higher incomes in the Hotel Industry in a locality of Turkey. The problem perceived in the hotel industry case presented during the study, is that the supply of beds exceeds the demand producing an unbalanced market

which inhibits the competitive advantage to the destination. The authors state that the unbalanced growth makes the estimation of demand difficult and so the rate of return. The researchers highlights the market oriented nature of the hotel industry due to it is considered a high fixed costs business. As a result, hotel operators behave as incomer oriented depending of the demand changes (Uner, et al., 2008).

Uner, et al. (2008) concluded that a hotel is using YM if the room price and bed demand are positive correlated. In other words, these two variables grow or decrease simultaneously and proportionally to the same direction. When there is no relationship between these two variables, the authors affirm there is no YM practicing. Then when the coefficient of the bed demand in the price equation is positive and statistically significant, the managers can adjust the price according to the demand movements. In the case study, the authors found that when demand is inelastic in terms of price, the managers have the incentive to increase the price to reduce the gap between actual and expected income. Additionally, an increase in price when the demand is inelastic will result in an increase in revenues. In the long term, this YM situation will provide an incentive to increase prices in order to reduce the gap between demand and supply (Uner, et al., 2008)

In economic theory, price is the main factor used to explain the links between supply and demand for a product (Yeoman & Ingold, 1997). According to an investigation, the price decision framework provides an explanation to the dynamics of YM. The prices at which hospitality and tourism products are offered for sale affect the demand for those products and therefore revenue and profit. Then profit maximization depends of market reactions and internal marginal costs. However, this investigation states that the price can only be raised in two ways; either lower the price and high volume, or higher price and accept lower volume (Yeoman &

Ingold, 1997).

For the following section, we will explore some of the characteristics of the tourism industry in terms of marketing; specifically the following section will explore the importance of pricing and quality issues.

The Tourism Market

Consumption behavior and price analysis.

Regarding on pricing decisions and its effects in the consumption, Yeoman and Ingold (1997) explored in their studies the customer behavior when analyzing the prices of leisure products. They state that the purchase of a holiday represents a deliberate decision in which the individual invests part of their limited resources, and that it is often treated as priority expenditure when planning personal or family expenditures. It implies that tourists have chosen not to spend that money on alternative products or destinations. The authors established that tour operators and travel agencies emphasize prices rather than the destinations' attributes thus resulting in deviating the customer attention to the comparison prices analysis. The interesting part of the cost benefit analysis made by the authors, falls on measure the tradeoff between revenue obtained by the high volume and lower prices or low volume and higher prices. Assuming that both strategies brings the same amount of revenues, then the tourism yield becomes relevant in this evaluation (Yeoman & Ingold, 1997).

Furthermore, a study made by Dwyler and Forsyth (2009) reveals the effects of changes in prices when addressing an event. The study shows that price rises will limit the expansion of economic activity in the region due to the increasing in the costs of other industries. The authors explain that the increase in tourism expenditure is expected to be greater than the net benefits

that the expenditures flows generate for the community. Concerning to the consumer benefits, the study highlights the concept of consumer surplus described as the experience where the consumer is willing to pay more to attend the event than the actual price. The authors also propose two net benefit measures: the business and the labor surplus. The labor surplus is described as the situation where labor force is hired at a wage that is higher than what workers would accept to take the job. The business surplus is defined as the situation where the event businesses are able to serve the extra demand (due to the event), without reducing services to other customers and without requiring additional capital or land. In terms of social impacts, the authors establish that they are generally ignored and are not sufficiently defined in a cost-benefit analysis (Dwyler & Forsyth, 2009).

Price and quality relationship.

When trying to assess a purchase, being a service or a physical product, the customer has basically two variables to consider: price and quality. In general, these two variables are highly related in the tourism products and services and thus the importance to consider them when trying to maximize the tourism yield. Concerning on the quality, many studies coincide that the customers who receive an average quality paying high prices will feel exploited and therefore unsatisfied in their experience even when the quality is under the normal parameters of service.

If we consider that a destination faces a downward demand, then as the price is reduced, the destination attracts a higher number of visitors mostly low profiled while increasing the price and quality will result in an opposite effect (Yeoman & Ingold, 1997). A study carried by Poater and Garriga (2009) analyzed the price and quality relationship using data from internet and parameters like price packages and number of stars parameter from hotels. They found that the

one-star hotels are not usually the cheapest. Since the more stars, the more satisfaction, the authors explain that the customer tend to book other cheaper and more starred hotels, then highly starred hotels decrease their price on certain days to capture more customer surplus.

In summary, there are different opinions trying to converge around the effects of pricing, YM, and consumption behavior. Fluvia (referred in Poater & Garriga, 2009) states that tourism companies in general use a price strategy where the price is set according to a profit margin over the average costs. Smith (as cited also in Poater & Garriga, 2009) asserts that in the tourism industry often the high prices are set to cover the high fixed costs which results in sales decreasing, and finally in loss of yield. By contrast, Smith stated that lower prices stimulate sales, reduce average costs, and raise margins and yield. Accordingly, Sinclair and Spurr (referred in Poater & Garriga, 2009) explain that a price strategy with different prices captures the maximum customer surplus.

Segmentation and positioning.

Some studies have been analyzing the relationship between the price and positioning in the tourism market and its effects on profitability. A study carried by Yeoman and Ingold (1997) states that the price-led marketing has expanded and that has the power to attract or reject the less desirable tourists. Thus, there is possible to segment the tourists according to a defined profile. In this profile can be defined clusters according to purchasing power (or income), age, gender or nationality, among others. In terms of purchasing power, the study explains that low profile tourists can pay the basic travel package but not the extended one, which includes souvenirs, extra excursions, restaurants and nightclubs.

Regarding on the price of a travel package and the tourist behavior, Yeoman and Ingold (1997) explain that there is a direct relationship between detrimental client behavior and low priced access. These investigators remark that those who are well educated and high incomers will be more sensitive and respectful (to the cultural environmental and social issues) while vacationing. The authors also state that unique products (destinations or touristic attractions) may command a premium price policy. This decision can isolate the destination from the competition and the externalities. In this sense, the author refers that attractions well positioned will lead to the least sensitive travelers to put a maximum market value on the attraction. The study concludes that an attraction may occupy a key position by projecting the identity and image of the destination.

Similarly, in a study carried by Poater and Garriga (2009) explored the dynamics of the hotel industry and its connection with segmentation practices. It shows that segmentation is an important tool for achieving a higher yield for hotels. The study explains that YM has been used in some hotels by applying price discrimination and peak load pricing in order to maximize profits. These procedures are accompanied by investigations over demand patterns and identification of rooms difficult to sell, so that they are promoted with lower prices and leaving the rest at a full price therefore optimizing yield (Poater & Garriga, 2009).

Also, Yeoman and Ingold (1997) propose a purchasing perspective when analyzing the role of segmentation in the profitability achievement. They explain that the variations in the importance of any category of purchase between different customers can be understood by the degree of interest and involvement. In their studies, the authors found that demand represents the willingness of the customer to buy the product based on the perceived value and the resulting

opportunity cost, such willingness to buy (elasticity of demand) leads to the volume of sales. They concluded that the demand price relationship is useful in determining the revenue, but it is useless in determining the profitability without the supply side.

In the next section, the lector will be introduced to different techniques used to measure and determine the impacts of the tourism from the traditional YM approach. It includes an analysis of the advantages and disadvantages of the so called TSAs and CGE model.

Assessing Tourism Impacts

In order to clarify the concept of tourism yield it is necessary to create reliable tools able to measure the tourism effects. From the traditional YM approach, tourism yield is defined as the impacts that additional expenditure associated with a particular visitor market segment have on economic variables of interest (Dwyler, Forsyth, & Spurr, 2007). Among different tools to measure and assess the tourism yield are: tourism revenues, purchasing power, the TSAs (Tourism Satellite Accounts) and the CGEs (Computable General Equilibrium) models, I-O (input-output), CBA (cost-benefit), MR (multi-regression) and the multiplier analysis.

Several studies have tried to explain the effects of tourism over different issues. A study carried by Proenca and Soukiazis (2008) explains the importance of tourism activity as a driver for the enhancement of the standard of living. It makes an analysis about the per capita income in Greece, Italy, Portugal and Spain. Based on panel data techniques the authors conclude that tourism contributes not only to the improvement of the standard of living in those destinations, but also that tourism leads to economic growth. Specifically, the study based on international revenues data states that for every 1% increase in tourism revenues, there is a 0.026 increase in p.p. (purchasing power) per capita income in those countries.

A different perspective of the tourism impacts has been developed by Vu Chau and Lindsay (2009) by stating that tourism is a form of trade that represents exports as tourist arrivals. In this respect the paper explores the relationship between countries when exchanging tourism. The framework of this relationship according to the authors is a flow process from the developed countries to the developing world. This structure highlights that it is not only the wealth transfer from developed to developing countries, but also the impacts on the service sector employment. Besides the transfer process, the study explains that exogenous factors such as political crisis and natural disasters affect the trade relationship, and thus have to be considered in the assessment (Vu Chau & Lindsay, 2009)

However, a study carried by Dwyler and Forsyth (2008) underlines the limitations of using the visitor expenditures as a measure of yield. According to the authors the expenditures is the most common yield measure. Nevertheless, the study shows the limitation for the private sector when using expenditures as a yield-profit measure because expenditures are just a part of the profit structure. In addition, the research establishes the limitations of using expenditures in macroeconomic terms (income), since it considered just a partial indicator of the benefits to the economy (Dwyler & Forsyth, 2008).

TSA and CGE models.

In the tourism impact studies, the use of analysis tools and models has been amply documented due to the significance of the tourism effects on the economies. According to Dwyler, Forsyth, Fredline, et al. (2007) the TSAs (Tourism Satellite Accounts) are defined as a set of accounts or economic data base for tourism analysis, and well recognized internationally as the best tool when measuring the economic significance of tourism. Additionally, the CGE is

also considered an important assessment tool in terms of industry-wide effects modeling.

Dwyler, Forsyth et al. (2007) define CGE, as a simulation model which measure the impacts over an economy produced by changes in macro variables such as visitor expenditures.

Dwyler, Forsyth et al. (2007) agree with the OECD report in 2000 when defining the TSA as the official methodology that enables tourism activity to be assessed and compared with other industries in terms of value added, output and employment as contributions to a national economy. These authors affirm that among other functions, the TSA assists in providing data to measure productivity and profitability trends and recently in Australia has been used for tourism yield assessment (Dwyler, Forsyth, & Spurr, 2007).

However, a study carried in 2009 by Dwyler and Forsyth states that the CGE model is better accepted as an analysis tool since it can capture variables such as price changes, commodity flows, and labor market assumptions. The authors explain that this model is able to be calibrated according to the context where it is situated including macroeconomic scenarios. During the study Dwyler and Forsyth highlight that the CGE model is able to capture the sensitivity due to changes in variables such as relative prices or quantities (Dwyler & Forsyth, 2009)

According to an investigation, the advantages of the CGE model are that it allows the decision makers to visualize an input-output framework where it is included among other scenarios, foreign exchange markets, spending behavior and macro parameters into a supply side constraint context. These tools are useful when attempting to assess tourism industry performance using indicators such as price, profitability, and tourism yield. In this study, the authors also discuss the fact that tourism differs from other economic activities in that it makes

use of a diverse of inputs from other industry and thus it is difficult to assess its overall contribution to an economy (Dwyler, Forsyth, & Spurr, 2007).

In the study developed by Dwyler, Forsyth et al. (2007), the authors propose some yield measures to evaluate the tourism impacts through the TSAs and CGE models. It proposes the TSA and CGE as tools to find out how an additional tourist from a particular market, impacts on value-added, profits, and employment in the tourism industry. The research explains some yield measures (developed by The Australian government's official tourism research agency: TRA) such as the rate of profit on tourism sales, and the employment generated per thousand visitors from a set of niche markets such as honeymooners, holidaymakers, backpackers, first-timers and so forth. The study concluded that both TSAs and the CGE models serve both to estimate impacts of changes in macro-variables of interests (Dwyler, Forsyth, & Spurr, 2007).

Characteristics of the CGE model.

In particular, the CGE has been recognized lately by many investigators as a more complete and integral tool for impact evaluation. For example, a study carried in 2006 by Dwyler, Forsyth et al. presents an assessment using the CGE model as analysis tool for the economic impacts in special events. The research explores also the effects of events in the host region, inter regional, inter industry, and nationally by comparing the input-output model (I-O) and the CGE model. This study includes also the consideration of variables such as: resource constraints, foreign exchange effects, multistate and intraregional effects, taxes, subsidies, and integration of regional and national economies. In the same perspective the study presents the influence of special events in the labor market. The authors affirm that the CGE method is the best tool when attempting to assess the economic impacts of a special event, over the I-O. It is

because the CGE contemplates the whole economy and not just part of it. In this valuation, the study states that the CGE model is able to incorporate displacement effects present in an event such as: increases in prices due to the increases in demand, the pressure on the supply constraints, and shifts on expenditures patterns (Dwyler, Forsyth, & Spurr, 2006).

Some other studies have been trying to incorporate in the impact analysis the time variable. For example, a research study presented by Blake in 2009 makes use of the CGE model to explain the effects of economic impact of tourism by comparing between anticipated and unanticipated tourism booms in a dynamic context. The study concludes that the economic effects differ depending on the dynamic conditions and the anticipated or not anticipated events in the economy analyzed. Additionally, the research states that if it is determined those future events, the policy makers are able to manage the future. The authors explain that the decisions about the future are associated to the demand forecasting and those shocks that could bias it. Thus, when it is anticipated the demand it is possible to modify investment decisions, capital stock and output growth. Some of the proposed approaches are: the oligopolistic markets or the monopolistic competition that could influence the pricing behavior. Furthermore, it affirms that when the dynamic condition of the analysis is evaluated, the benefits of tourism are lower (Blake, 2009).

In general the studies agree that special events are intense shocks for an economy. It is due to the short period in what the event produce marginal and fast increasing in variables such as demand, price rates, etc (Dwyler, et al., 2006). These shocks have different and larger impacts from those that are constant in terms of time and intensity. The authors stress that the economic evaluation of events including sports, festivals, and cultural events have been keeping the

attention of stakeholders due to the economic impacts of these activities.

The CBA, I-O and MR analysis.

The input-output analysis (I-O) is one of the most used analysis tools when assessing tourism yield. A study conducted by Dwyler and Forsyth in 2009 explores the yield (economic gains) produced during special events. This study presents an analysis of the I-O modeling as an assessment tool for the economic impacts over special events. The authors state that there are economic and non economic reasons why a government finance an event justified due to the new expenditure flow over the local economy. Events, says the authors can produce social and cultural benefits but in contrast, they can generate negative impacts over the environment, or negative effects on the society. However, the research shows that economic benefits are in general positive, but the social and environmental effects are treated separately in the tourism yield assessments. The paper highlights two standard approaches when assessing events: the economic impact analysis, and the cost- benefit analysis (CBA) The CBA tries to estimate wider effects so that it is necessary to put dollar values on these effects in order to estimate the overall outcome. In relations to the economic impact analysis, it is a tool that measures the effects in an economy by the expenditures of visitors (Dwyler & Forsyth, 2009).

In particular, CBA estimates the sum of welfare effects of an event for a community including benefits and costs in consumers, producers and third parties participating (Dwyler & Forsyth, 2009). Though, Dwyler and Forsyth explain that to focus only in the economic impacts is too narrow so that, it is required to provide enough information to policy makers in terms of social and environmental effects. In addition, they state that if the net social benefit of an event results positive, then the event is considered an efficient use of the society's economic resources.

The researchers conclude that CBA is a detailed but not complete assessment tool, while the CGE modeling is more complete but less detailed. However, they highlight the potential of the CGEs due to its flexibility to incorporate variables even though would be a demanding task.

The multi-regression (MR) analysis is another tool incorporated in the tourism yield assessment. For example, a study carried by Rosentraub and Joo (2009) utilized the MR method to evaluate the relationship between investment and tourism market capturing. Interestingly, the study presents the purpose of some investments to attract human capital. In it, the authors show the returns for the tourism industry from different packages, finding out that those related to sports and amusements generated the higher gains for the regions, while cultural and art oriented investments presented no impact (or even negative) in employment generation. In this sense, the authors suggest the following premise: if the returns exceed the investment costs, then their importance for regional development is significant. The study concludes that the increasing in investment phenomena in the tourism industry is due to the competition for the market share.

The multiplier impact analysis.

The use of a multiplier as an impact analysis tool in the tourism yield assessment has been also documented. For example, A. Saayman and M. Saayman (2006) conducted an analysis to explore the socio-economic benefits from the National Parks in South Africa by testing variables such as production, income generation, and employment. In this study was used the income multiplier analysis in order to calculate the output and income multipliers. The authors founded that more than one third of the businesses in the area were directly established as a consequence of the park operation. In terms of employment, the authors found that 96% of all workers who live in the area work for the National Parks, which has an important impact over

the socio-economic benefits for the area (A. Saayman & M. Saayman, 2006).

In a study carried by Ki Lee and Taylor (2005) the use of a multiplier as a yield analysis tool is documented in a sport event case. According to it, the sport tourism has become important in recent years due to its significant contribution to the host economy. In this respect, the paper highlights the necessity of a better understanding and conceptualization of economic impact assessment in mega sport events. Using an I-O model, the authors found that the calculations on the 2002 Football World Cup were overestimated and it produced misleading evaluations over the economic impacts of the event. Crompton (referred in this study) states that accurate economic impact assessment depends on accurate counts of visitors to the event. Then in order to capture the accurate economic impacts over the host economy it is required to exclude those expenditures that occur in the absence of the event. When estimating the total economic impact of the event using the I-O model, the authors determined two variables: the expenditure and the output. As a result, the tourist expenditure component is multiplied by the tourism output multiplier component. Thus the multiplier is a measure of the effect of one unit change in tourist spending on change in a certain business turnover. For example, the multiplier for the restaurant business sector was calculated in 2.86 which express that for every dollar spent by the visitor to the event, it is generated to the host economy an equivalent of 2.86 USD in output (sales) in the restaurant sector (Ki Lee & Taylor, 2005).

Likewise, Keske and Loomis (2008) explored the use of the I-O model in order to assess the economic contribution and net economic value in a destination. With this framework the user is able to analyze the inter-industry effects and thus calculate the full multiplier effect of direct changes in local income and employment. In its methodology, the study describes the use of the

visitor expenditures data, the Dichotomous choice contingent valuation and the willingness-to-pay (WTP) question format to analyze and collect the data respectively. Then the study presents a regression model where the dependent variable is the WTP and the independent variables are the travel distance, education of the respondent, and bid amount (the increase in dollar amount the visitor was asked to pay). The study concludes that there is a 1.2 multiplier effect of value added over wages and business income in a local economy (Keske & Loomis, 2008).

Yield Management and the Cultural Component

Culture has been along the history one of the most important components of the tourism industry. For this reason, studies have been carried around methodologies to maximize profits in the culture industry. For example, Beatriz Plaza (2006) conducted a study to quantify a museum's impact on tourism and employment and its yield (return on investment and net present value). She used a quantitative analysis of statistical data to isolate the economic contribution of a museum. The author explains that the contemporary urban planning focuses on forms of high culture that has impacts on the investment attraction. From her perspective, museums are examples of cultural industry and they have the characteristic to operate under increasing returns on scale defined as high fixed costs and low variable costs (Plaza, 2006). According to her investigations the ROI analysis (Return on Investment) applied is limited since it does not capture the return generated in terms of cultural value. In other words, it only reflects whether the public sector recovers its investment on the museum through tax income using the NPV (Net Present Value) of the cash flows.

Similarly, Greffe (2004) (as cited in Plaza, 2006) developed a method based on mathematical functions that determines the number of new jobs regarding to the quantity of

visitors. This study reports that 10000 visitors create 1.5 direct jobs in a museum case study. According to Greffe, the investment in a cultural asset (such as a museum) has also negative effects. Greffe explains that the investments in heritage sites generate speculation and increase the price of services affecting the local firms. Greffe thinks that the efficacy of heritage investment in developing a city depends on two relationships: the greater the diversification of the city's economy, the greater the absorption of price tensions. Furthermore, the more the redevelopment zone's markets are integrated, the easier the absorption of price tensions. The author affirms that funds to finance cultural assets seem no contributing to the quality of life in a community.

Yield Management and Sustainability: The Transition

The traditional approach of YM has shown that it has served as an operational tool for tourism businesses and therefore this approach optimizes exclusively the economic profitability subject to the business resources constraints. Evidently, this approach lacks of a broader perspective and some investigators have been trying to incorporate the sustainability concept into the YM approach.

Considering that the YM is a tool that intends to maximize the profitability by administrating in an efficient manner the sources constraints, the investigators have been making efforts to find the optimization of the YM as a tool, and the economic benefits as the final objective of the tourism operations. Lundie, Dwyler, and Forsyth (2007) using an I-O analysis of tourist accommodation, report that the conjunction of high economic benefits and environmental goals is not possible and thus, economic-environmental trade-offs are necessary.

Social responsibility and the transition.

A concept that can establish a bridge between the YM and the sustainability is the Corporate Social Responsibility (CSR). A study carried by Dwyler, Jago, Deery, and Fredline, (2007) explains the relationship between the philosophy of CSR and the indicators for tourism yield. According to this study, the CSR is defined as the commitment of businesses to behave ethically and contribute to economic development while improving the quality of life for the local society in general. Hence, the authors define sustainable yield as a concept that implies three dimensions, the economic, social, and environmental yield. It concludes that there is no methodology to merge these three dimensions in a single yield sustainability measure. However, it highlights that the attempts of indexes or indicators provide tourism operators a better understanding of the trade offs. An example is that the tourism operators can assess the financial benefits considering the potential of social and environmental costs. This results in a better understanding for achieving higher sustainable yield which is consistent with the philosophy of CSR. Additionally, it mentions that achieving sustainable and profitable tourism products generates a competitive advantage for a tourism destination. This is because the final goal is to provide a better quality of life for the residents, resulting in a better place to visit.

The transition to a multi- dimensional perspective.

For centuries, the service industry has been trying to maximize their revenues using YM. The only difference with today is that there are more sophisticated systems and approaches. The application of computerized YM can achieve increases in revenue from two to five per cent and thus gains a competitive advantage affirm Belobaba and Wilson, and Kimes and Wagner (referred in Okumus, 2004). However, YM still focuses only on technical, forecasting, and mathematical modeling. The implementation of YM is considered an important tool to increase

revenues even though it implies to face a complex and multidimensional challenges including: market segmentation, demand cycles, pricing knowledge, ability to monitor performance, etc (Okumus, 2004). Some of the conclusions reported by Okumus (2004) are that the implementation of a YM is not a rational and linear process but dynamic and continuous, where the organizational structure, culture, and dynamics of an organization play important roles.

The role of stakeholders in the transition process.

Different stakeholders with different interests and objectives are involved in the tourism industry. In one side are those who see the industry from the traditional way to maximize profits; while in the other side are those who have a broader perspective of the profit maximization. Accordingly, their decisions and interactions are going to be determinant for the future of the industry. Hall and Wouters (as cited in Scott & Breakey, 2007) explain the potential conflicts between environmentalists and tourism operators as the main stakeholders. These conflicts are mainly due to the biological sources limitations when operating with tourism businesses. The proposal of the authors is to use the term of yield as a common objective in the tourism planning, arguing that the decision makers targets a high yield parameter operating a destination. In this sense, the authors agree that the concept of yield has been imported from the hotel management systems and not from biological systems, and this issue represents a handicap against the usefulness of the yield as a parameter when analyzing broader terms.

Similarly, a research conducted by Scott and Breakey (2007) affirms that proactive management from different stakeholders is a desirable activity leading to more sustainable economic, social and environmental outcomes. This study presents the use of yield as a performance indicator for destination management. The researchers use the term *destination*

visioning citing Ritchie what according to this term, it is necessary to develop a common direction in the destination management to achieve holistic positive results.

Limitations of YM in macro-applications.

In a wider perspective, Scott and Breakey (2007) describe the sustainable yield concept and the application of YM to a destination. In this adaptation process, they state that it requires the inclusion of non market services such as ecosystem services, natural capital, culture, and lifestyle advantages. The authors conclude that yield management does not appear to apply to destinations. The argument is that the hotel management applied as analogy in destination management is just a partial solution because both have substantial differences that limit the direct application of yield in destination management.

Some of the limitations when applying YM to destinations are documented in the study carried by Scott and Breakey (2007):

- Capacity constraints are less important,
- There is no one manager of a destination
- Some business may require a small number of high-value customers, while others desire a high volume
- Lack of information systems
- Constraints for a destination differ from those for a business unit.

Accordingly, the authors recommend the use of revenues at the destination level instead of the concept of yield assuming that revenues are a simple measure of economic injections, and that more sophisticated measures are difficult or impossible to use at a destination level (Scott & Breakey, 2007)

Modeling the sustainability.

The inclusion of the sustainability concept when assessing tourism yield has been considered in a more systematic manner by using the I-O and the CGE model. Both offer a view towards the limitations and constraints that destinations and tourism operators did not consider in the recent past when maximizing their profits. Dwyler, Forsyth, and Spurr (2005) explored the use of more scrupulous techniques to evaluate the special event impacts. According to their reports, the use of the I-O model is rejected because it does not consider the resource constraints in an economy, neither inter-industry effects of demand. Additionally, the study presents an analysis of the fundamentals of the I-O model concluding that:

- All inputs are supplied freely with no resource constraint
- There are constant proportions between inputs and outputs (for example, between labor and output)
- Price effects and government participation are considered neutral (even though the constraints in economies produce variation in prices and costs, and taxation has wider effects on prices).

During the analysis of different techniques the study highlights that the CGE is better recognized than the I-O model due to its wider scope. In opposition to the use of the I-O model, Dwyler, et al. (2005) explain that the CGE model covers those deficiencies in the I-O and hence, is better recognized as a tool for economic impact assessment. The authors also concluded that economic impacts are not the same as net economic benefits. The difference refers to the costs of supplying land, labor and capital (Dwyler, et al., 2005).

Yield Management and Sustainability: A Wider Approach

The Tourism Yield Concept

Today, tourism yield and sustainability concepts should not be analyzed separately due to the necessity of maximizing the tourism subject to the labor, land, and capital constraints. Some approaches developed recently point out to concepts such as *sustainable tourism* defined by Butler (referred in Becken & Simmons, 2008, p. 428) as:

Tourism which is developed and maintained in an area in such a manner, and at such a scale, that it remains viable over an indefinite period and does not degrade or alter the environment in which it exists to such a degree that it prohibits the successful development and well being of other activities and process.

Also, an alternative definition of sustainability: “for the output of an economy to be sustainable it must generate sufficient income to meet all costs of production and make investment such that at least a constant stock of capital is maintained” (Becken & Simmons, 2008, p. 421)

In terms of yield, Dwyer and Forsyth (as referred in Becken & Simmons, 2008) explain that yield has been used to describe a measure of net benefits of tourism activity. And they state that can be interpreted as the net gain for the host society, taking into account the costs of providing public sector infrastructure and other non-market costs such as the environmental resources.

The inclusion of sustainability into the tourism yield concept has presented difficulties when trying to define tourism yield. For example, Northcote and Macbeth (2006) conducted a research where the authors try to conceptualize the tourism yield by using a study case to

demonstrate how a model from a multidimensional approach can be used for tourism yield assessment. These difficulties complicate the economic assessment in many perspectives. As a solution, the authors introduce the '*Integrated Tourism Yield*' concept, which is a framework with yield being the net gain or loss of inputs and outputs. The paper does not focus on empirical techniques for calculating yields but on merely the conceptualization that could result useful for the sustainable destination management. Dwyer and Forsyth (as cited in this study), report that today tourism yield concept is applied to whole destinations and even countries. Dwyer and Forsyth also introduced the definition that incorporates non- economic gains in the environmental, cultural and social spheres, connecting these issues to the importance of sustainability (Northcote & Macbeth, 2006)

Tourism Industry Strategies and Sustainability

In general, tourism industry strategies are developed by governments to boost the industry, and in a broader perspective, to impulse the economy regionally. The strategic planning for such objective, have to be linked to the sustainability in order to maximize the yield and ensuring the industry live permanently. In this sense, numerous studies have been conducted in terms of sustainability and tourism industry strategy. For example, in an industrial analysis of the tourism sector the authors report that the tourism industry has characteristics of a competitive market with few entry barriers, with few unnatural barriers to trade, large number of firms, and prices are set based on the market expectations. Accordingly, the resources will be employed at a level that reflects their opportunity cost, in other words; will be used at a level that provides a sufficient return to investors for the cost of capital. The authors explain that since it is a competitive market, any abnormal profit is dissipated. It does not mean that firms will not make profits, but that those profits reflect the cost of providing a service, including human capital. The

net benefits from tourism are less than aggregate expenditure of the tourists affirms the study. This is because; in order to provide the tourism service to the visitors is necessary to give up valuable resources. In other words, the goods and services that tourists buy have a cost to the economy that equals the price that tourist pay for them (Dwyler & Forsyth, 1997).

Tisdell (as cited in Dwyler & Forsyth, 1997) provides a list of target variables for governments when formulating policies regarding on tourism and sustainability:

- Foreign exchange earnings
- Net national economic benefits from foreign tourists as measured by changes in economic surpluses,
- Employment generation,
- Cultural and sociological impact on the host population,
- Conservational or environmental impact,
- Promotion of international co-operation
- Income distribution consequences.

Tisdell also explains that there are economic instruments such as the taxes and regulations that inhibit the environmental deterioration by controlling the tourism density.

Other studies have shown that sustainability should also be focused on the cultural heritage. Hearn (referred in Carter, 2008) states that the Cuban government maintain a tourism industry strategy in order to exploit the Cuban heritage in benefit to its economy. The Cuban State has created a tourist agency administered by the Office of the Historian of Havana. This agency is in charge of reinvest the profits in the municipalities without deteriorating the cultural

capital infrastructure. Through foreign joint ventures tourism has become an important driver in its economy, but even that, the positive impacts on the society are not reflected. In fact the study presents evidence that the social impacts have been negative after the investment in the tourism industry. It mentions that a survey conducted by Colantonio and Potter in 2006 revealed that 84% of the Habana Vieja's residents declared that tourism has interfered in their lives. The study concludes that the social impacts recall the socialistic ideology when the residents complain about the effects of tourism over the unity, equality and national identity being affected (Carter, 2008).

Generating synergy for the tourism industry strategy.

Unfortunately, in the microeconomic perspective the participants in the tourism industry are more focused on gaining the market and on competitive strategies than on creating synergies with the consequent negative effects on the environmental issues. Hence, the only way to evaluate and optimize the industry from the yield perspective is from the *umbrella strategy* where sustainability and environmental issues are taken in account (Yeoman & Ingold, 1997). Similarly, Gummesson (as referred in Yeoman & Ingold, 1997) presents the holiday industry in a systematical way where the players are well off by adopting industry strategies.

Even though it seems that the higher the competition between operators in the tourism industry the lower is the incentives to focus on sustainability issues, (due to costs and investment are reduced until the level required by the high competition) there is evidence that industry strategies achieve benefits for all the stakeholders. The importance of setting holistic and cooperative tourism industry strategies is documented in a study developed by Yeoman and Ingold (1997). They present the Mallorca destination as a study case which highlights the

importance of set the objectives clearly and by working in alliance with the companies involved. By implementing this strategy, Mallorca came from being a bad reputation to a successful destination in terms of sustainability of the cultural, social and environmental areas.

A systemic strategy seems to be a solution when trying to generate synergies, sustainability and economic benefits between tourism operators. Carlsen (referred in Northcote & Macbeth, 2006) highlights the tourism gains as forms of yield that impact on the inputs and outputs. This system perspective emphasizes the inter-relatedness of tourism activity and evidence that tourism yield has in general an input-centric perspective. Hence, the tourism yield is not seen as merely the economic or financial gains under the capacity or input constraints. Similarly, in the study carried by Northcote and Macbeth (2006) the researchers incorporate the sustainability concept and the system perspective in the yield equation. The proposal of the study not only provides a holistic approach, but also a shift in perspective that gives social and environmental issues the same weight to the economic ones.

Positioning and visioning strategies.

As it has been stated during the present literature review, the positioning concept is a determinant variable when maximizing tourism yield. Besides the analysis of macro variables, some investigators include in their analysis the positioning tool. *The Draft New Zealand Tourism Strategy 2015* (referred in March, 2008) is a document that tries to create a future strategic picture of the national tourism industry. This document identifies key concepts to boost the industry. It reports that it is necessary to migrate from price setting strategy to increasing yield strategy. Accordingly, March (2008) explains that Australian tourism operators and executives have developed the concept of *profitless volume*. It describes the phenomena where the number

of visitors increases, while the profits remains constant and even worst diminish. March concludes that the role played by the vision setting when attempting to boost the industry is highly relevant. In this sense, the author states that the Australian National Tourism Organization (NTO) has defined a clear vision to how and where they want to be situated as tourism destination.

One of the most representative examples of destination positioning is the Cuba case. In a study realized by Carter (2008) the author analyzes the emerging Cuban tourism industry from a ethnographic and state commodification perspective. The author explores the tourism market based on new forms of consumption controlled by the government. In the study, La Tropicana nightclub is proposed as a example to show how the State commercializes the Cuban culture by promoting it through a sexualized, Afro-Cuban, exotic, erotic and tropical environment. Additionally, the author reports that Cuba, directly or indirectly, sells to the visitors the desire to experience the socialistic live before it disappears.

Tourism yield and marketing strategies.

The relationship between tourism profitability and marketing has not only been documented in the traditional YM approach, but also in the new approach. The comprehension of the connection between these two concepts is important in order to develop efficient tourism industry strategies. A study accomplished by Mottiar (2006) explores the profile of the visitors who consume holiday home properties, finding that this type of tourist concentrate their expenditure in the local area, bringing economic benefits and sustainable development to the destination. An interesting finding of segment is that they consume non-tourism products or

services from the locality, generating a broader or at least an alternative injection of money (Mottiar, 2006).

The identification of market segments is also documented in a study realized by Dwyler, Forsyth, Fredline, et al. (2007) In this research, the authors incorporate the destination robustness concept which implies parameters such as the community size, stage of tourism development, tourist-local ratio, the industrial concentration ratio, and the environmental and cultural vulnerability. By including the social and environmental issues, the authors reveal that the decision makers have to analyze the tradeoffs related to the tourism yield and its impacts. The authors conclude that even the difficulties to evaluate the impacts of tourism yield in a variety of dimensions, the measures presented help to the policy makers to better understand the tradeoffs related to tourism development and destination marketing.

In summary, the assessment of tourism yield impacts (from a marketing approach) is a major task due to the complexity of the sustainability components. For instance, Wheeler (referred in Chhabra, 2009) defines *green marketing* as the concept which promotes a product that is better for the customer and less destructive for the environment. From this perspective, Chhabra proposes a marketing framework for heritage tourism institutions from a sustainability approach. In his study, the author explores the marketing plans of twenty four museums in USA, finding that it exists myopia from the museums since only two of the twenty four museums presented the community-based components in their marketing plans. In this respect, the study states that the heritage tourism industry still promote the marketing as a panacea.

Differentiation and quality strategies.

The concept of quality when determining marketing strategies is determinant for destination policy makers. Dwyler and Forsyth (2008) carried out a study where they found that the tourist destinations have changed their marketing strategy trying to improve the quality associated to tourism growth. It confirms the fact that the way to increase quality is to move away from the mass tourism strategy. This implies to move from low profit margins (volume of visitors) to high yield (segmented tourists). The study concludes that the positive relationship between high quality and high yield tourism variables ensures that the industry obtains optimal return of their investments. In this direction, the authors explain that in order to assess wider impacts (social and environmental) it is necessary to know where the visitors in each market segment spend their money.

Tourism yield and marketing: a driven sector perspective.

When the strategies for the tourism industry adopt a macro perspective, and in particular a macroeconomic interest, it is necessary to incorporate macro variables in the tourism market analysis in order to boost those strategies. Some studies have documented the use of macro variables in their analysis. For example, Brau et al. (referred in Sahli, Dwyler, Maupertuis, & Nowak, 2007) compared the growth performance of tourism countries in terms of country size and tourism specialization with a 143 countries sample. This study found that tourism-specialized countries are often small, and grow faster than other country subgroups. They also found that smallness is associated as a not good growth factor; however, when smallness is accompanied with tourism specialization results in a positive relationship for economic growth.

The development of strategies at destination level also requires the generation of knowledge that until now has been incipient. Dwyler and Forsyth (1997) stress the necessity of

research in the fields of four main topics: theory of tourism and economic development, socio-economic impacts of tourism development, interrelationship between tourism and environment and, the public implications arising from the growth in tourism. The authors also highlight the necessity to differentiate the types of tourists because this helps to identify the most profitable market segments. In their studies about the market segmentation, the authors found that is not possible to assess different yields from tourist types beyond expenditures and length of stay. Accordingly, the investigators explain that the tourist type could bring light of the level of sensitivity towards the environment. For example, the endemic tourists are more sensitive to take care of their environment than those consider mass tourists.

A study carried by Becken and Simmons (2008) not only incorporates macro variables in its analysis, but also includes sustainability indicators to provide a wider macro evaluation. The purpose of this study is to assess the sustainability of different types of tourists in New Zealand by using the concept of yield and by developing yield indicators in the areas of financial public sector and sustainable yield. The methodology is based on a research into the New Zealand tourism sector and therefore has a sector driven approach. Referring to the sustainability, the study presents an indicator of the degree to which the tourists are disperse as a measure of regional development and as a net benefit for communities. The authors discuss that the concentration of visitors in certain destinations can give insights of the community assessment in terms of environmental costs. They also found that the backpacker and camping tourists provide a greater financial yield and are not concentrated. However, these two segments are the greatest user of publicly provided tourist attractions and thus come at a higher cost to the government. The authors conclude that its analysis is a tool for complex decision making, and that it helps to identify strategies that lead to high yield tourism.

Tourism Yield Assessment

The assessment of tourism yield has been described by a variety of investigators as a complex analysis due to the involvement of variables from different fields including the cultural, the environmental, and the social issues. Even though the tourism yield assessment is an incipient concept, some researchers have presented different studies in order to clarify it. Dwyler and Forsyth (2008) have carried a study where the authors present yield measures involving wider economic impacts. Some of the analyzed measures are the Gross Operating Surplus (GOS), Gross Domestic Product (GDP) and employment. The study suggests for further research in the tourism yield field, to emphasize the social and environmental dimensions

It seems that one of the solutions for the tourism yield assessment is to incorporate in the analysis interdisciplinary tools. For example, in a study developed by Hu and Wall (2005) the authors present an analysis of the environmental strategies applied in the most visited cultural tourism attraction in Hainan, China. It demonstrates that environmental management is useful when trying to enhance the competitiveness and thus the profitability in a tourism attraction. It explains that for the majority of tourist attractions, the profitability depends on the degree of attraction of their natural resources. Lately, the decision-making depends on the environmental involvement of the attraction. For this reason, the managers have decided to focus on the environmental management, including environmental friendly image and marketing in order to achieve higher profitability (Hu & Wall, 2005).

As we can notice, when in the tourism yield assessment is included the economic variables, and the environmental indicators, the complexity of the analysis increases considerably. A study realized by Lundy, et al. (2007) proposes some preliminary yield measures that enable destination managers to better understand the tradeoffs between environmental and

economic objectives. The authors found that from a destination management perspective, tourism market segments are potentially associated with economic, environmental and social impacts as consequence of the services consumed. The results presented conclude that high daily expenditure tourism markets are associated with higher impacts to the environment compared with visitors who spend less money in the destination analyzed.

While there are studies that try to use economic variables in their tourism yield assessment, there are others that include non economic measures. For example, Becken and Simmons (2008) highlights the importance to evaluate the provision of public goods and services which some are priced and some other are not. The authors says that for those inputs with no property rights are then free of charge and not evaluated economically as consequence. However, Cracolici, Nijkamp, and Rietveld (2008) developed a tourism yield assessment where they incorporate non economic variables such as customer satisfaction and human resources. In this study, the authors use the economic efficiency analysis based on a production frontier approach. In order to achieve the analysis, the authors hypothesize that the physical and human resources represent the inputs of the destination; while the outputs are the arrivals or the customer satisfaction. In this way, the study assesses the efficient resource use of a tourist destination.

The Environmental Component

The inclusion of variables such as customer satisfaction, quality and environmental impact has been also documented in the tourism yield assessment. For example, Reynolds and Braithwaite (1997) introduced the satisfaction and environmental sustainability as variables to consider when optimizing revenues. Interestingly, the study associates the boat tour business with the environmental dimension by considering the environment as a key factor for customer

satisfaction. The authors state that tourism is not different from other service industry in the sense that total quality is a driver for the customer satisfaction. In addition, the study considers the main tourism input as the environmental issue, whether it is natural, human manipulated, or a cultural heritage environment. Similarly, Parasuraman, Zeithaml and Berry (cited in the study), report that satisfaction is a function of the assessment of service quality, product quality and price. The study concludes that businesses that apply yield management techniques without considering environmental protection and customer satisfaction will create a standard service with the potential to be environmentally harmful (Reynolds & Braithwaite, 1997).

From a more technical perspective, the use of both economic and environmental theory in the tourism yield assessment has been also documented. In this respect, the utility function has served in economic theory to make a variety of output analysis combining the inputs involved. This function has also served in the tourism yield assessment to analyze the effects of tourism activity and its relationship with the sustainability. For instance, in a study conducted in 2008, Brau explains the preferences of tourists using a choice modeling approach focusing on demand-enhancing effects which allows implementing sustainability policies. In terms of environmental negative effects, the study presents an analysis over the Sardinia coast where there are evidence of congestion of tourist attractions and transformation of the coastal environment because of tourism activity. The study concludes that there is an explicit conflict between the environment utility function and the characteristics of the tourism supply, so that it is required theoretical insights that can match the economic and the environmental sustainability (Brau, 2008)

The consideration of the environmental protection in the tourism yield assessment has been focused in general; on the negative impacts produced by visitors. However a study

conducted in Africa by M. Saayman and A. Saayman (2006) evidences that the tourism impacts are not necessarily negative. This study highlights the importance of tourism by considering it as an economic driver of the 21st century due to its multiplier effects and relationship with other industries. During the study the authors found that the economic impacts over the sustainability in the destination are positive. It states that most governments in Africa tend to reduce budgets for conservation purposes. Thus, the role of the economic injections from tourists determines an alternative budget for conservation and sustainability. In consequence, the authors offer an alternative perspective of how these injections produce social and economic impacts by an induced strategy. With this strategy, the authorities employ locals, promote local subjacent products and services and extend license or permissions to the local businesses (M. Saayman & A. Saayman, 2006).

Sustainability Assessment

When trying to maximize profits, it is necessary to consider the limitations in the use of the inputs available. Therefore, the use of the tourism yield management as a maximization tool requires a deep understanding of the limitations and restrictions involved in the tourism activity. In recent years, investigators mainly from the environmental fields have been concerned about the exploitation of natural resources during the tourism operations. Accordingly, the tourism activity has been migrating from a merely economic-business perspective to a social-environmental perspective. This migration process includes the incorporation of the sustainability concept into the optimization of the tourism industry.

The World Commission on Environmental and Development's Brundtland Commission Report: *Our Common Future* (referred in Landorf, 2009, p. 54) defines *sustainable development*

as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

In this report, it is also defined the principles of sustainability:

- Holistic planning and strategic decision-making
- Preservation of essential ecological processes
- Protection of human heritage and biodiversity and
- Growth that can be sustained over the long term.

Accordingly, *economic sustainability* implies “a system of production that satisfies present levels of consumption without compromising social equity and the needs of future generations” (Landorf, 2009, p. 54).

Similar definitions that help to clarify the concept are provided by Basiago (referred in Landorf, 2009) who declares that social sustainability assumes economic growth constrained by the requirement for equity, empowerment, cultural identity, and institutional stability. Similarly, Reynolds and Braithwaite (1997) describes sustainability as demand satisfaction in a way that attract and satisfy the demand while meeting the needs of the host population and safeguarding the environmental and cultural heritage of the destination.

Some studies such as the carried by Lundie, et al. (2007) assesses the environmental impacts of tourism from the use of energy, water, greenhouse gas emission and ecological footprint concepts. However, the authors stress that due to the complexity of modern economies it is difficult to quantify the environmental effects of goods and services consumed by an economic entity (humans or business or organizations). The study also incorporates in its

analysis of environmental impacts, the role played by Environmental Management Systems such as the ISO 14000 where companies are able to establish commitments with the environmental issues according to their operations.

Alternative Sustainability Assessment Methodologies

The linearity in the tourism yield analysis has been criticized by the specialists, but has been accepted due to the incipient knowledge available about tourism yield. For instance, a research implemented by Schianetz and Kavanagh (2008) presents a linear sustainability assessment but complemented with a Complex Adaptive Systems (CASs) analysis. It proposes sustainability evaluation indicators called the Systemic Indicator System (SIS). The authors have defined the SIS methodology as a semi-quantitative methodology that allows using conceptual tools without necessarily collect data. With it, the authors intend to link the socio-cultural, economic and environmental dimensions of sustainability to a touristic destination. The SIS is also suggested for pollution prevention, and mitigation purposes when managing tourism projects. Similarly, using the CASs approach, the authors conclude that it is possible to use this methodology to identify and select a set of indicators, generate a systematic analysis of the connectivity between the socio-cultural, environmental and economic systems, and hence, understand the system behavior involved.

Accordingly, using a variety of theories and disciplines in their studies, including ecosystems, global change science, system behavior, integration, and non-linear science, Farrell and Twining-Ward (2005) attempts to guide to the lector to a sustainability transition process. The authors affirm that without the transition process toward sustainability, there is a risk for a better tourism future. Hence, the authors warn about the risk for tourism business to continue

under a linear perspective. They also explain that using seven steps it is possible to achieve such transition to the sustainability goals in the tourism business:

- Understanding complex adaptive systems
- Learning from natural ecosystems
- Co-evolution of human and natural systems
- Extending tourism systems, integration
- Adding post-normal science and the last one is
- Facilitating a transition.

According to Pulido Fernandez and Sanchez Rivero (2009) the use of the four dimensions of the sustainability: economic, environmental, social and institutional; is helpful when assessing the sustainability. They propose a method based on a global tourism sustainability index. This approach uses different weights in order to compare and determine the sustainability in the tourism destinations involved. The weights determine a ranking where the destinations can compare their status and act in consequence by using policies and strategies. Contrasting to the use of a global index as a sustainability assessment tool, Schianetz, Kavanagh, and Lockington (2007) think that the assessment for the sustainability in a tourism destination is very complex and it should be analyzed depending on the destination characteristics and the objective of the assessment. Accordingly, the authors present a review about different tools covering the socio-cultural, economic, and environmental dimensions of the sustainability assessment. The analysis presented includes Life Cycle Assessment, Environmental Audits, and Adaptive Environmental Assessment, among others. During their review of different analysis tools, the investigators found that Sustainability Indicators (SI) are adequate to identify areas of

concern, while Environmental Impact Assessment (EIA) is a tool adequate when evaluating environmental impacts on new developments, and that Adaptive Environmental Assessment (AEA) is a measure that allows to evaluate cumulative impacts.

Environmental Sustainability

The ecological footprint concept.

In general the sustainability term has been associated to either, economic or financial issues. However, the sustainability concept can be applied to the social, cultural and environmental spheres. Recently, the environmental sustainability concept has been a reference inflection point for the industrial activity due to the impacts that the natural resources has experimented. A variety of investigations around the relationship between economic activity and environmental sustainability has been documented. Collins and Flynn (2008) for example, explain the *Ecological Footprints* (EF) as a measure of the environmental sustainability when organizing major sports events and in particular, the effects from the visitor consumption patterns. Accordingly, Martinez-Alier (referred in Collins and Flynn, 2008, p. 754) describes the EF analysis with this question: “how large an area of productive land is needed in order to sustain a population at their current standard of living?”

The Collins and Flynn’s investigations state that the environmental degradation is produced due to the economically unvalued resources which operate out of market. Since this issue drives to externalities, it is essential to reduce such non-market effects by assigning monetary values. According to a Wacerangel and Rees study, (as cited in Collins and Flynn, 2008), the EF fundament are that there is a constraint or limitation in the amount of bio-productive on the planet to satisfy the human resource demands. The study explains that the EF

is measured in (gha) which represents a world average productive hectare or *global hectare* per capita. The study concludes that if the (gha) is exceeded and not regenerated, then the ecological capacity suffer a deficit.

Environmental sustainability and macroeconomic analysis.

Several economists have analyzed the tourism industry performance at macroeconomic levels, but just a few have considered the environmental sustainability as a determinant variable in their analysis models. In a study carried by Cerina (2007), the author analyzes the dynamic behavior of a small economy (specialized in tourism) including the environmental sustainability. Additionally, the author has incorporated the market failures analysis, externalities and taxation that incentive private agents to provide the social optimum. According to the Cerina's investigations the tourism development, improvements in environmental quality, and economic growth, could all occur at the same time thus demonstrating that are not incompatible. The investigations also state that, although economic growth and tourism development cannot be sustained in the long term by only endogenous factors, the insertion of exogenous factors (trade and consumption) could make it possible without affecting the environment sustainability. Cerina also highlights the importance of the technology factor by stating that when there is a reduction in technology availability, the agents prefer to adopt a mass-volume tourism strategy, affecting with this choice the environmental quality and sustainability.

The exogenous factors included in the Cerina's investigations are also exemplified in the studies made by Logar (2010). This author states that there are negative impacts on the environment, society, and culture due to the tourism industry operations. Hence, Logar's study focuses in regulatory policies adopted by governments in order to minimize those negative

effects. The author explains that the regulatory instruments and policies from the government are helpful when assessing sustainability and economic analysis. By applying the study in a tourist destination, the author found that the negative impacts include large-scale urbanization, visual pollution, and environmental loads. The environmental loads include: the increasing freshwater consumption, wastewater outflows, solid waste quantity, and attraction area saturation. Between the social impacts, the study highlights the loss of traditions and changes in the local social structure. Concerning to the economic field, the impacts showed are: the lack of quality in accommodation facilities, income and employment by seasonality and non trained labor force. Logar's study concludes that in order to mitigate the negative effects, it is necessary the application of the following effective instruments (conducted in many countries when dealing with large-scale urbanization effects): eco-taxes, user fees, eco-labels, and control in over-capacity.

Even though in the last decade there has been an increase in the numerical data available to analyze the environmental sustainability, still there is lack of relevant information. Some researchers like Chan, Wong, and Lo (2008) points out the lack of numerical data for environmental impact analysis in general and in particular from hotel operations. Hence, the authors have proposed an environmental impact index and aim to create *green* TSAs with which evaluate the environmental costs. They also remark the necessity to count with parameters and policies such as the ISO14000 standards, the purchase of energy-efficient equipment, and a building environmental plan in order to revert the visible negative impacts of tourism activity.

In summary, the application of the correct government policies against the negative impacts produced by the tourism business activity can be complemented with the awareness of

the natural resources constraints. In this sense, Giannoni and Maupertuis (referred in Sahli, et al., 2007) stress that in the long run, the maximum number of tourist to a destination is restricted by a carrying capacity constraint. It indicates that if the over capacity is exceeded, there is going to be a fall in future visitation and loss of profits to operators.

Socio-Cultural Sustainability

In less degree, the cultural sustainability analysis has been addressed in the tourism yield assessment research. Though, the cultural sustainability requires more attention since an important proportion of the tourism income is generated by cultural heritage destinations. For example, Landorf (2009) has explored the relationship between the heritage tourism and sustainability by analyzing six cultural World Heritage Sites (WHS). During the study, the author analyzes the criteria related to the sustainability principles. The criteria have included: the strategic orientation, community vision and values, stakeholders' participation, and local tourism infrastructure capacity. The author analyzed the six sustainability plans from the WHS finding that those variables that are non-economic or intangibles were absent in the plan. Accordingly, Firat and Dholokia (as cited in Landorf, 2009) explains that tourism industry makes that cultural elements are translated into marketable commodities. This strategy is the result of what the authors define as *cultural fragmentation* which occurs when the cultural elements (music, architecture, food, etc) are isolated from the culture they originally form in order to be traded. In opposition to this view, Jamal and Tanase (2005) has explored the application of the sustainable principles to the historical place known as Dracula Park in Romania. They concluded that it is necessary to develop cultural sustainability and ethic principles in order to avoid conflicts, and maintain the sustainability status of the cultural destination. The conflicts have emerged since there are private and state interests involved. For example, Coca Cola Romania is the exclusive

drink distributor in the park; while a publicly owned company administers the park. The role of the NGOs over the conservation of the monastery as a cultural heritage (rather than a thematic park attraction) has been determinant in its conservation regardless of its economic viability.

Conclusions

The investigations around the tourism yield (considering broader perspectives) are in an incipient and developing stage in comparison to the traditional YM field. Consequently, the body of research intended to introduce to the lector to both perspectives: the YM approach and the tourism yield approach (including the sustainability component). In general, YM seek to maximize the profitability subject to resources constraints, while the new approach intends first, to define the concept of tourism yield from a broader perspective. Hence, the new approach studies is introducing the basis and fundamentals for a new age of YM where in a first stage tries to assess the net economic (and non economic) benefits into a socio-cultural and environmental context. The transition process of the tourism yield investigations follows a natural tendency to explore, analyze, and suggest models and methodologies to boost the tourism industry from an amplified and sustainable view.

During the next chapter, the lector will be introduced to the methodology for the tourism yield assessment of the present thesis research, considering the Fjord Norway Region study case

Method

Design

The present research is based on a study case approach since this methodology serves as a useful tool to describe, explain, and explore the tourism yield in the Fjord Norway Region context. The Fjord Norway study is an *intrinsic* study case (Lapan & Quartaroli, 2009) that seeks to understand the Fjord Norway issues from the tourism yield optimization perspective. Also, the study case serves as an instrument for theory building and theory testing by applying macroeconomic and sustainability theories, descriptive and inferential statistics, and optimization Linear Programming (LP) modeling. With an empirical analysis of the Fjord Norway, the study aims to provide insights of the tourism yield impacts on the region.

The methodology is divided in three main components:

1. A macroeconomic assessment of the tourism yield,
2. A proposal optimization model of tourism yield and,
3. A marketing analysis (using a survey as instrument).

In particular, the research intends to estimate the following issues:

- Determine the Fjord Norway net benefits from the tourism activity (Value Added analysis)
- Estimate the tourism activity impact over relevant macroeconomic variables (by a multiplier effect analysis)
- Propose an optimization model for the tourism yield in Fjord Norway subject to resources constraints and sustainability considerations (by applying a LP Model)

- Provide insights of the tourism yield in Fjord Norway region through a marketing analysis and statistics modeling (descriptive and inferential).

Data Collection

In general, the macroeconomic analysis is based on quantitative data extracted from the website of the Statistisk Sentralbyrå section *Statistics Norway*, specifically from the National and Regional Accounts, and from the Tourism Satellite Accounts (TSAs). Regarding on the sustainability analysis part, the data was collected from the *Living Planet Report 2008* created by the World Wide Fund for Nature (WWF).

Survey: Your Trip to Fjord Norway

Participants

The research project concerns international tourists who had been vacationing in the Fjord Norway region. The research was developed in two phases: in the first part, two Master students from the Norwegian School of Hotel Management, Cicilie Reinsberg and Linn Therese Vinje conducted a questionnaire *in situ* with the objective to collect preliminary information by asking (randomly) to the tourists about their experiences during their vacations in the summer 2009. In a second phase, a follow-up survey was sent electronically to 1133 (384 answered) tourists who freely volunteered to participate in the survey when they were interviewed in the first phase. Thus, the convenient sample is represented by 384 international tourists who answered the online survey format designed in the *QuestBack* IT platform (see Appendices A, B and C in pages 125, 126 and 127 respectively).

Design and Procedure

The research methodology was non-experimental and overall the follow-up survey is divided in two parts: the first one includes ten questions designed and administered by Cicilie

Reinsberg and Linn Therese Vinje. The second part (which concerns to the present thesis) comprises twelve statements including nominal, ordinal and scale format questions designed to capture the visitors' perceptions in relation to environmental, social, cultural and economic issues. The last five questions of the survey were designed to examine the descriptive characteristics of the visitors' sample such as nationality, gender, age, income and level of education. The descriptive and inferential statistics were computed using the SPSS statistical software.

Accordingly, the presented survey intends to examine associations between independent and dependent variables and hence, construct relevant findings and possible conclusions around the tourism yield in the Fjord Norway region. Consequently not only descriptive, but also inferential statistics have been chosen in order to explain correlations/associations between relevant variables and thus support the hypotheses formulated. The main variables (dependent and independent respectively) measured were: the Fjord Norway's quality/satisfaction (rated by the visitors) and the visitors' expenditures (on the environmental, cultural, and social activities) and the visitor's profiles defined by gender, age, nationality, educational level, and purchasing power. It is important to remark that the quality of Fjord Norway's as a tourist destination was not explicitly defined in the survey instrument, so that it is assumed (for the purposes of the research) as a visitors' perception over the destination's quality and the level of satisfaction when vacationing (for more details see Limitations of the study in page 113).

The online survey was sent the 25th of March, 2010 to the volunteered participants including an invitation and confidentiality statement (see Appendix A in page 125). A recall was also sent the 29th of March, 2010 (see Appendix B in page 126).

Tourism Yield Assessment in the Fjord Norway Region

Definitions

According to the study *Using the concept of yield to assess the sustainability of different tourist types*, “for the output of the economy to be sustainable it must generate sufficient income to meet all costs of production and make investment, such that at least a constant stock of capital is maintained” (Becken & Simmons, 2008, p. 421). From this perspective, and in order to conduct an economic impact analysis of the tourism industry in Fjord Norway (FN), we utilized the Value Added (VA) concept. According to a definition provided by the Statistisk Sentralbyrå (SSB), the Valued Added is the gross income generated from domestic production in an industry or sector (or in total for all industries/sectors), derived and defined as output less intermediate consumption (SSB, 2010). In other words, the VA is the economic contribution resulting from the price of a product or service, less the production costs (including land, labor and capital goods). Hence, we selected the VA as an economic net benefit measure of the tourism yield contribution (independent variable) to the Fjord Norway region. The VA data covers only the period 2000-2006 since it is not available data from a longer period in the SSB data base.

Also, the SSB defines the *tourism industry* data as the compilation of sectors related to the tourism activity:

- Hotels and restaurants
- Transport: passenger transport, activities of travel agencies and rental of transport equipment.
- Culture and entertainment: motion picture, other entertainment, news agencies, cultural activities, sporting and other recreational activities

The Multiplier Assessment

The use of multipliers in economic impact analysis has been documented in some research documents. For example, Dwylér, et al. (2005) mention some of these studies (Bushnell and Hyle 1985; Turko and Kelsey 1992; Donnelly et al. 1998) that have been used to estimate impacts on an economy over macroeconomic variables such as: output, income, and employment. For the purposes of a cause-effect analysis, we have chosen as dependent variables: the national Gross Domestic Product (GDP), the Fjord Norway's Industry Gross Value Added (GVA) and Fjord Norway Tourism Industry Employment. As independent variable: the tourism yield impact (injection of VA in the region). The procedure to obtain the multiplier is based on a calculation of the change in the variable in question, dividing it by the tourism yield shock (injection of VA). For the purpose of the study and considering its inherent limitations, the analysis of the tourism yield shock intends to isolate the effects by keeping all other variables constant.

Tourism Yield and Sustainability Analysis

The sustainability assessment integrated in the present thesis is based on the Ecological Footprint (EF) approach. According to the *Living Planet Report 2008* the *Ecological Footprint (EF)* measures the humanity's demand on the biosphere, while the *Biocapacity* (supply side) is defined as "the area of biologically productive land and sea required to provide the resources we use and to absorb our waste" (wwf, 2008, p. 14). The biologically productive area is expressed in global hectares (gha), defined by the report as the hectares with world-average biological productivity. Due to the limitations of time and data availability, the *Biocapacity* (BC) and the *Ecological Footprint* (EF) estimations for the Fjord Norway region are based under the following assumptions:

- The BC and EF per capita in Fjord Norway are the same as in Norway
- The Total Fjord Norway's BC is proportional (geographically) to the total country's BC
- The visitors' amount (tourism shock) is constant and produces a marginal increase in the EF of the region.

The Fjord Norway Sustainability Model

Linear Programming (LP) is a mathematical method that determines the optimization of a given objective function (for example, maximization of profits) subject to linear constraints. This methodology is generally applied in the Economics and business fields, but also is utilized in other disciplines such as engineering, transportation and energy (Wikipedia, 2010). For the purposes of the study, simplicity, and considering its limitations, the objective function is determined by two variables:

- X_1 = Tourism industry in FN and
- X_2 = Rest of local industries

Then:

$$X_1 * \text{tourism ind. yield contribution} + X_2 * \text{rest of ind. yield contribution} = \text{Net FN Profits}$$

The marginal yield contribution (per capita) for the FN tourism industry was estimated from the average VA generated annually divided by visitors and employees. Likewise, the *rest of industries yield contribution* (per capita) was estimated from the average VA generated annually by the rest of local industries and then divided by the FN population (excluding visitors and tourism industry employees).

The resources constraints are determined by two variables:

1. The *Human Capital* and
2. The *Biocapacity*

The *Human Capital* variable is assumed to be the number of persons who generates the yield contribution for each type of industry cluster: tourism industry or rest of industries.

The Linear Programming model and the maximization of the Fjord Norway Yield (objective function) were estimated using the data analysis tool *Solver* included in the Microsoft Excel 2007.

Study Case: Fjord Norway Region

Fjord Norway is well known as an important tourism destination in the western region of Norway. This area covers the counties of Rogaland, Hordaland, Sogn og Fjordane, and Møre og Romsdal. With about 85,000 km² of land, fresh water, and coastline, this region offers to the tourists a unique experience (SSB, 2010). The most important natural attractions in the region are the characteristic Norwegian fjords that include the Lysefjord, Hardangerfjord, Sognefjord, Nærøyfjord, Ordfjord and Geirangerfjord (Fjord-Norge, 2010). The tours are enriched not only by the experience with the untouched nature, but also with the particular contact with the Norwegian culture and lifestyle. The region is characterized by villages, farms, islands and a peaceful life in small towns and non overpopulated cities.

Culture and Nature

This region is rich in cultural and natural destinations. The UNESCO World Heritage has declared the western fjords of Geirangerfjord and Nærøyfjord as natural heritage while Bryggen the old wharf located in Bergen has been declared as cultural heritage of the world (United-Nations, 2010). Additionally, there are a variety of interesting cultural attractions such as the well known festivals, concerts, historical buildings, the Viking history, handcrafts, etc. Among the nature based activities, the visitors can enjoy activities such as waterfall sightseeing, hiking in the mountains, country walks, guided glacier hikes, canoeing, kayaking, skiing, diving or sailing. The Breheimsenteret glacier centre and the Norwegian Glacier Museum in Fjærland are two of the five national park centers in Fjord Norway. For example, the glacier museum in Fjærland has an exhibition on climate change and how it is affecting the glaciers (Fjord-Norge, 2010). In Table 1 we summarize the protected areas under the Cultural Heritage Act, 2008 (see

Table 1 in the next page) that could help to have a general perspective of the cultural capital of the region.

Table 1

Protected Areas under the Cultural Heritage Act, 2008¹

	Cultural Environments		Archaeological Sites		Security Zones		Listed Buildings		Total (number)		
	km ²	number	km ²	number	km ²	number	km ²	number	Norway	FN	%
Total Norway	58.1	11	122.29	67 125	20.2	290	0.87	5 965	73,391	14,451	20%
Rogaland	4.74	2	19.72	5 565	0.7	20	0.06	432		6019	8%
Hordaland	4.98	2	4.17	3 209	0.48	15	0.09	562		3788	5%
Sogn og Fjordane	0	0	1.23	1 595	2.99	11	0.04	249		1855	3%
Møre og Romsdal	0	0	3.22	2 527	0.74	15	0.04	247		2789	4%

¹ Source: Statistics Norway, Statistisk Sentralbyrå

Note: ^a The numbers also include approximately 270 monuments and sites below water, with a total area of 1.6 km²

^b Protected areas pursuant to the Nature Conservation Act.

Regional Industry

Hordaland

The economy of this county is based on a variety of industries most of them small or medium-sized companies, that operate not only locally but also internationally. The aluminum ingots, highly advanced catamaran vessels, remotely operated underwater vehicles, sardines, gas-fuelled engines, salmon, fruits growth, and the largest offshore platforms in the world, are some of the most characteristic products in Hordaland. The most important industrial areas are: Bergen, Stord, Odda, Husnes, Ålvik, Øygarden and Mongstad. In terms of tourism, Hordaland is the Norway's second most popular tourist area during summer, in particular Bergen, Voss, and Hardanger areas (Hauge & Eriksen, 2005).

Rogaland

The Rogaland's communities are considered centers for the Norwegian industry development. Among the most important industries are the brickworks and crockery production, canning, sardines, metallurgical and hydroelectric power plants, and the production of renewable energy. Sand, gravel, and stone have become important export products. Specifically, Rogaland has become the country's resource for sand and stone used in Stavanger to build the concrete sections of oil platforms, and for the construction industry in general. Haugesund and Stavanger are two of Norway's most important shipping centers where petroleum products are transported to the rest of the world (Rogaland-fylkeskommune, 2006).

Sogn og Fjordane and Møre og Romsdal

The economy in the Sogn og Fjordane county is based on the manufacturing of primary industries and fisheries where most of the locals are employed, and in a smaller proportion in the private and commercial products and services industry. The geographical area does not present

big urban areas in comparison to the rest of the Fjord Norway region. The tourism industry is an important income generator due to the magnificent nature and particularly due to the fjords destinations (Eriksen, 2006). Accordingly, More og Romsdal's economy is generated basically through mature companies in the maritime industry, marine sector, furniture manufacturing, and process industries such as: petrochemical, aluminum, plastics and mining. Special emphasis is made over the aquaculture and fisheries management (Kjølmoe, 2010).

Figure 1 can provide a general view of the Fjord Norway's economy. It shows the Fjord Norway output measured in terms of Gross Value Added (see Figure 1 in page 70)

Tourism industry in the Fjord Norway Region

According to a document of the Norwegian Ministry of Commerce and Industry (Nærings- og handelsdepartementet) the tourism industry during 2009 experienced a decline in the number of foreign visitors to Norway, mainly due to the global financial crisis. Table 2 summarizes the employment in the tourism industries in the Fjord Norway region showing some of the falls in the tourism industry employment (see Table 2 in page 71). Despite the external factors affecting the tourism, the authorities are positive about the tourism recuperation. Specifically because the Fjord Norway region has been rated in first place (of a list of more than 130 world's most attractive destinations) in 2009 by the National Geographic Society's Center for Sustainable Destinations and the National Geographic Traveler Magazine (Nærings-og-handelsdepartementet, 2009).

Tourism Infrastructure

The accommodation for visitors covers a wide range of options, from exclusive hotels located in important cities of Norway, up to camping areas, cabins, and farm and guest houses

for limited budgets. Tables 3 and 4 recapitulate the accommodation infrastructure in the Fjord Norway region, including percentage of utilization (see tables in pages 72 and 73 respectively). The road network is well developed and there are different options when traveling by boat, train, ferry or flight. Mainly in the cities, visitors are able to find a variety of restaurants, bars and nightclubs where to enjoy national or international cuisine, and the exciting Norwegian nightlife (Fjord-Norge, 2010).

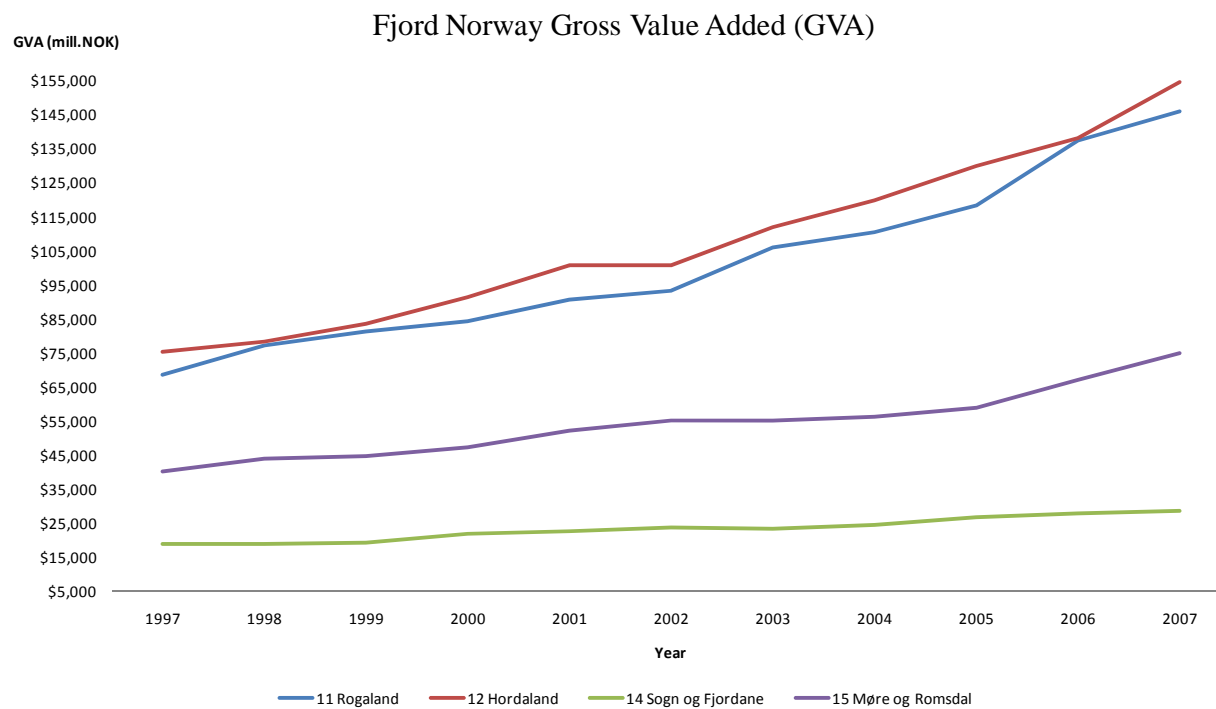


Figure 1. Fjord Norway Gross Value Added²

² Source: Statistics Norway, Statistisk Sentralbyrå

Note: ^a The Gross Value Added is used as an output measure (mill.NOK) for regional or smaller economic entities.

Table 2

Employment in Tourism Industries Period 2000-2006³

	2000	2001	2002	2003	2004	2005	2006	# full time jobs	
								Average	Total
Rogaland	12.8	11.7	11.6	12.2	11.9	12.2	13.1		
Jobs created/lost		-1.1	-0.1	0.6	-0.3	0.3	0.9	50	300
Hordaland	15.1	15.2	14.3	14.9	14.9	14.9	15.2		
Jobs created/lost		0.1	-0.9	0.6	0.0	0.0	0.3	17	100
Sogn og Fjordane	3.9	3.6	3.4	3.6	3.6	3.6	3.6		
Jobs created/lost		-0.3	-0.2	0.2	0.0	0.0	0.0	-50	-300
Møre og Romsdal	6.6	6.3	6.2	6.2	5.9	6.2	6.2		
Jobs created/lost		-0.3	-0.1	0.0	-0.3	0.3	0.0	-67	-400

³ Source: Statistics Norway, Statistisk Sentralbyrå

Note: ^a Tourism industries include: Hotel, restaurants, passenger transport, and activities of travel agencies, rental of transport equipment, motion picture, entertainment, news agencies, cultural activities, sporting and other recreational activities.

^b Number of jobs in thousands (2000-2006), excluding the *Average* and *Total* amounts

Table 3

Open Hotel & Similar Accommodation Establishments in Fjord Norway Region⁴

	Hotel & Establishments			Beds			Rooms		
	2009	2010	%	2009	2010	%	2009	2010	%
Norway (total)	901	917	100%	133,224	142,930	100%	62,711	65,919	100%
Fjord Norway (total)	223	230	25%	30,718	32,057	22%	16,052	16,413	25%
Rogaland	57	57		8,468	8,514		4,675	4,662	
Hordaland	72	73		12,052	12,079		6,019	5,968	
Sogn og Fjordane	46	50		4,544	5,419		2,281	2,525	
Møre og Romsdal	48	50		5,654	6,045		3,077	3,258	

⁴ Source: Statistics Norway, Statistisk Sentralbyrå

Note: ^a Number of hotels and similar establishments registered until February 2009 and February 2010

Table 4

Utilization of Beds in Hotels and Similar Establishments in Fjord Norway Region during the period 2005-2009⁵

	Month (average)	% Utilization	Beds utilized	Year (average)
Rogaland	8,060	42%	3,373	40,473
Hordaland	12,265	44%	5,352	64,226
Sogn og Fjordane	5,793	31%	1,787	21,444
Møre og Romsdal	5,624	38%	2,110	25,326
Fjord Norway (total)				151,469

⁵ Source: Statistics Norway, Statistisk Sentralbyrå

Note: ^a Number of hotels and similar establishments registered monthly from 2005 to 2009 and % of utilization

*Data Analysis and Discussion****Tourism Yield Analysis in Fjord Norway***

The table 5 (see table in page 78) summarizes the Value Added (VA) generated by tourism industries in the Fjord Norway region (Rogaland, Hordaland, Sogn og Fjordane, and Møre og Romsdal) during the period 2000-2006. The VA (annual average) in Fjord Norway (FN) was calculated in: 17,262 mill. NOK and the total VA in the 2000-2006 period was: 120,834 mill. NOK. The economic injections to the region are mainly provided by Hordaland and Rogaland, and in less proportion Møre og Romsdal and Sogn og Fjordane respectively. According to the 2000 = 100 index, the most productive period in terms of VA injection was 2006 with 110.9

Table 6 summarizes the estimated tourism yield impacts in the Fjord Norway region (see Table 6 in page 79). The impacts were calculated based on the injection (shock) of VA and the change in the corresponding macroeconomic variable: National Gross Domestic Product (GDP), the Fjord Norway Industrial Gross Value Added (GVA), and Fjord Norway Tourism Industries Employment. The multiplier was used to estimate the tourism yield (VA) impact over the corresponding macroeconomic variable. During the period analyzed (2000-2006), the GDP in Norway experienced an annual change of 113,055 mill. NOK. Therefore the GDP multiplier indicates that the net economic benefit from the FN tourism activity represented approximately 7 times (or 15%) the change in the national GDP. A positive signal of the FN tourism impact on the Norwegian economy occurs when this multiplier decreases, while a negative signal takes place when the multiplier increases.

Generally in Economics, the GVA is an output measure used in entities smaller than the whole national economy, such as a regional economies, industries or sectors (Wikipedia, 2010). From this perspective, FN region experienced an annual change in GVA of 20,907 mill. NOK. As result, the corresponding multiplier states that for every NOK (from the

tourism activity) was generated 1.21 NOK of output for the FN's economy. In terms of employment, the tourism industries in Fjord Norway region registered an annual average reduction of 50 jobs, resulting in a negative multiplier impact of -0.003

In summary, the multiplier analysis has served as an expression of the GVA and employment potential per extra NOK injected by the FN tourism activity.

Tourism Yield and Sustainability

Table 7 (see table in page 80) shows a comparison between Norway, Denmark, Sweden, Europe, and the World in terms of *Biocapacity* (BC) and *Ecological Footprint* (EF). The biggest ecological debtor is represented by Europe, whereas Sweden has a surplus of 4.9 (creditor) and Norway presents a deficit of 0.8 (gha) per capita. The global EF exceeds the world's capacity to regenerate resources by about 30 %, while Norway exceeds its *Biocapacity* per capita by 13%. *The Living Planet Report 2008* states that if the human being's demands on the planet continue at the same rate, by the mid-2030s we will need the equivalent of two planets to maintain our lifestyles consumption (WWF, 2008). In other words, the human being is consuming the resources that underpin the consumed goods and services much faster than they can be replenished. Accordingly, this report highlights the concept of *sustainability wedges* to tackle the *Biocapacity* overshoot across different sectors. The tourism sector is not an exception, and a deep analysis is required since this industry consumes ecological capital due to its natural resources intrinsic demand.

Table 8 (see table in page 81) synthesizes the total *Biocapacity* in Norway (29.28 mill. gha.) calculated from the national population and the global hectares per capita. Assuming that Fjord Norway Region has the same national *Biocapacity* rate per capita, we estimated the FN's *Biocapacity* (6.12 mill. gha.) based on its population and geographic area (in proportion to the whole country).

Tourism Yield Impact on Fjord Norway's Biocapacity

As indicated in table 9 (see table in page 82), the estimated *Biocapacity* in Fjord Norway region is 6.12 mill. gha., while the population demands 8.59 mill. gha. This results in an ecological overshoot of 2.47 mill. gha. In other words, the Fjord Norway demand exceeds the total region's capacity to regenerate resources by about 40 %.

Assuming that the visitors in FN are constant (151,469 average visitors per year and that they demand 6.9 gha of EF per capita), the visitors' EF shock (1.05 mill. gha) was computed. The visitors' demand shock represents approximately 17% of the ecological supply of the region. As result, the demand over the biologically productive area is increased from 8.59 up to 9.64 mill. gha. due to the visitors' shock in FN region, producing a total overshoot of 57% This represents a negative effect that in the absence of tourism would not occur. In other words, if the population's demands (summed to the visitors' demand) continue at the same rate, it will be required the equivalent of halve of the Fjord Norway region (1.57) to maintain the registered level of lifestyles consumption.

Fjord Norway Sustainability Model

According to the *Living Planet Report 2008*, the sustainability concept is one of the drivers for the solution of the ecological overshoot (WWF, 2008). The consumption of the *Biocapacity* has become a major concern due to the unbalances between the supply of ecological capital and the demands from the economic activities. Consequently, there is a necessity to develop equilibrium models to maximize industries' profitability ensuring that the ecological capital remains productive indefinitely for the wellbeing of future generations. For the purpose of the present study, the use of a linear programming model is proposed as an optimization model that seeks the maximization of the net economic benefits (yield) in the Fjord Norway region, by considering the sustainability concept, the tourism industry yield, and some of the resources constraints.

Using a Linear Programming (LP) model, the optimization of tourism yield industry in Fjord Norway region was calculated. The model takes in consideration two decision variables: *Tourism industry* and *Rest of industries*, as well as the resources constraints, and the yield marginal contribution.

The table 10 (see table in page 83) provides an overview of the Fjord Norway tourism industry composition. The EF (6.9 gha.) is assumed to be the same for both decision variables (X_1 , X_2). The *Human Capital* constraint was calculated based on the biologically productive area (FN *Biocapacity*) and the EF per capita. Accordingly, the *Yield Contribution* (per capita) was calculated based on the average value VA generated annually by the tourism industry (considering visitors and employees) and by the rest of the local industries.

The *Yield Contribution Structure* (see Table 11 in page 84) shows that the tourism industry in Fjord Norway region (including visitors and tourism industry employees) generates approximately 40% of the total FN yield.

The maximization of the *Yield Objective Function* considering the resources constraints (see Table 12 in page 85), results in:

- X_1 (tourism industry) = 0 and
- X_2 (Rest of Industries) = 887,596 NOK

Thus maximizing the Fjord Norway Yield in: 197,646 mill. NOK per year.

According to the LP model proposed, and considering its inherent limitations, the maximization of yield in the Fjord Norway region excludes the tourism industry ($X_1 = 0$) from the optimization formula. Either the model proposed or its resolution does not pretend to be conclusive, but only provide insights, and open the debate and analysis around the tourism industry yield-sustainability.

Table 5

Fjord Norway Value Added Period 2000-2006 (mill. NOK, current prices)

	Rogaland	Hordaland	Sogn og Fjordane	Møre og Romsdal	Fjord Norway (Sum)	Index 2000=100	% of change
2000	4,942	6,522	1,264	2,251	16,979	100.0	
2001	4,689	6,530	1,224	2,205	16,649	98.1	-1.9%
2002	4,982	6,599	1,359	2,628	17,570	103.5	5.5%
2003	5,279	6,358	1,290	2,332	17,262	101.7	-1.8%
2004	5,067	5,706	1,335	2,175	16,287	95.9	-5.6%
2005	5,279	6,358	1,290	2,332	17,264	101.7	6.0%
2006	6,715	6,432	1,270	2,400	18,823	110.9	9.0%
County Average.	5,279	6,358	1,290	2,332			
Annual Average					17,262		1.9%
Total					120,834		

Table 6

Fjord Norway Tourism Shock and Multiplier Impact Analysis on Macroeconomic Variables

	Annual (average)	2000-2006
Change in GDP (mill. NOK)	113,055	678,332
Change in Industrial GVA (mill. NOK)	20,907	125,441
Change in employment (number of jobs)	(50)	(300)
Fjord Norway Shock (value added)	17,262	120,834
Value Added Multipliers:		
GDP in Norway	6.55	5.61
Fjord Norway Region GVA	1.21	1.04
Tourism Industries Employment	-0.003	-0.002

Table 7

Comparison of Biocapacity and Ecological Footprint Overshoot (per capita⁶)

	Biocapacity (supply)	Ecological Footprint (demand)	Overshoot (gap)	Overshoot (%)	Ecological status
Norway	6.1	6.9	-0.8	-13%	debtor
Fjord Norway	6.1	6.9	-0.8	-13%	debtor
Denmark	5.7	8	-2.3	-40%	debtor
Sweeden	10	5.1	4.9	49%	creditor
Europe	2.3	4.7	-2.4	-104%	debtor
World	2.1	2.7	-0.6	-29%	debtor

⁶ Source: Living Planet Report 2008 (WWF, 2008)

Note: ^aAll values are measured in global hectare (gha) per capita

^bThe Biocapacity per capita and the EF in FN is assumed to be the same as in Norway

Table 8

Norway and Fjord Norway Region Biocapacity

	Biocapacity (mill. gha)	%	Biocapacity (global km ²)	Geographic Area (km ²)	%
Norway	29.28	100%	292,800	407,063	100%
Fjord Norway	6.12	21%	61,244	85,144	21%

Table 9

Fjord Norway Tourism Shock Impact on the Ecological Overshoot⁷

	Biocapacity (mill. gha)	Ecological Footprint (mill. gha)	Overshoot (gap)	Overshoot (%)	Population (mill.)
Norway	29.28	33.12	-3.84	-13%	4.8
Fjord Norway	6.12	8.59	-2.47	-40%	1.2
Tourism shock		1.05		17%	0.15
FN+Tourism Shock	6.12	9.64	-3.5	-57%	

⁷ Note: ^a The number of visitors (tourism shock) was estimated from the number of beds (accommodation) and the % of utilization in hotels and similar establishments in FN region

^bThe overshoot per capita is not consistent with the total FN region overshoot due to the geographical area assumptions when estimating the total region's Biocapacity

Table 10

Tourism Industry and Rest of Industries' Yield in Fjord Norway Region, Subject to Resources Constraints

Fjord Norway Tourism Industry Composition			
Resource	X1 = Tourism Industry (per capita)	X2 = Rest of Industries (per capita)	Resource Constraint
FN Biocapacity (gha)	6.9	6.9	6,124,409 Global Hectare (gha)
Human Capital	1	1	887,596 FN habitants
Yield Contribution (NOK)	\$ 91,584	\$ 222,675	

Table 11

Decision Variables and Fjord Norway Yield Contribution Annually

Decision Variables	Yield Contribution (NOK)
X1 = Tourism Industry (per capita)	\$ 91,584
X2 = Rest of Industries (per capita)	\$ 222,675

Table 12

*Linear Programming Model and Objective Function for the Maximization of the Fjord**Norway Region Yield*

$X_1 * \$ 91,584 + X_2 * \$ 222,675 =$	Fjord Norway Total Yield
Subject to:	
$6.9 * X_1 + 6.9 X_2$	6,124,409 Global Hectare (gha)
$1 * X_1 + 1 * X_2$	887,596 FN habitants
Assuming non-negative coefficients:	
$X_1 \geq 0, X_2 \geq 0$	
Solution:	$X_1 = 0$
	$X_2 = 887,596$
$0 * \$ 91,584 + 887,596 * \$ 222,675 =$	\$ 197,646 NOK (mill.)

Marketing Analysis: Relationship Quality/satisfaction vs. Segmentation

When a tourist evaluates to visit a certain destination, she/he has basically two variables to consider: price and quality. In general, these two variables are highly related in the tourism products and services assessments and thus the importance to consider them when trying to maximize the tourism yield. Assuming that a destination faces a downward demand, then as the price is reduced, the destination attracts a higher number of visitors mostly low profiled while increasing the price and quality will result in an opposite effect (Yeoman & Ingold, 1997). In order to test the previous assumption, and provide insights of the relationship quality vs. visitor's profile in the Fjord Norway Region, descriptive and inferential statistics were conducted.

Quality/satisfaction vs. Purchasing Power Profile

Hypothesis:

H_0 : *The visitors' purchasing power profiles have equal mean when rating the FN's quality.*

H_A : *There is some inequality among visitors' profiles when rating the FN's quality.*

The standard errors statistics (see Figure 2 and Table 13 in pages 91 and 92 respectively) confirm that the 7th profile (130,000-150,000 euro) is the highest when rating quality (9.17) and the second in level of variation (0.401), while the 6th profile (110,000-130,000 euro) registered the lowest rate mean (7.8) and the greatest variation (0.467). However, in order to conduct a statistically significant analysis able to confirm or reject the null hypothesis, the *One-Way Analysis of Variance* (ANOVA) was used (see Table 14 in page 93).

The results of the analysis does not show statistically significance differences among the visitors' profiles when rating the quality of Fjord Norway as a tourist destination ($F(7,299) = 1.245, p < 0.278$) therefore the condition of homogeneity among the purchasing power

visitors' profiles is satisfied with a 95% of Confidence Interval for Mean. In other words, there is less than 5% probability that this conclusion is obtained by random chance.

Complementing the FN's quality rate vs. visitors' profiles, a *Test of Between-Subjects Effects* was computed (see Table 15 in page 94). This test determines the magnitude of association between the FN's quality rate and the visitors' profiles. We found that in the sample, 2.8% of the variance in the FN's quality rate is associated to the visitors' profiles.

Quality/satisfaction vs. Age Profile

Hypothesis:

H_0 : *The visitors' age profiles have equal mean when rating the FN's quality.*

H_A : *There is some inequality among visitors' profiles when rating the FN's quality.*

Figure 3 (see page 95) shows a trend where in general the older the visitors, the higher the rate on FN's quality (between 8.3 and 9.0). Also, descriptive statistics demonstrate variations in the profiles' means (see Table 16 in page 96). The group of age between 36-40 years presents the lowest variation (0.148 Std. Error), while the highest variation is represented by the group *Over 76* years old (0.577). The *One-Way* ANOVA was computed to confirm or reject the homogeneity in the variances of means (see Table 17 in page 97).

The ANOVA results does not show statistically significance differences among the visitors' age profiles when rating the quality of Fjord Norway as a tourist destination ($F(11,367) = 0.569$, $p < 0.854$) therefore the condition of homogeneity among the visitors' age profiles is satisfied with a 95% of Confidence Interval for Mean. Consequently, a *Test of Between-Subjects Effects* was computed (see Table 18 in page 98). It shows that in the sample, 1.7% of the variance in the FN's quality rate is associated to the visitors' age profiles.

Quality/satisfaction vs. Level of Education Profile

Hypothesis:

H_0 : *The visitors' level of education profiles have equal mean when rating the FN's quality.*

H_A : *There is some inequality among visitors' profiles when rating the FN's quality.*

According to the sample, the trend (see Figure 4 page 99) illustrates that the lower the education among the visitors, the higher the rate on FN's quality and vice versa. Descriptive statistics shows the variations in the profiles' means (see Table 19 in page 100). The group of *Bachelor's degree* shows the lowest variation (0.117 Std. Error), while the highest variation (0.557) is represented by the *Elementary School* group. In order to test the established hypotheses, the *One-Way ANOVA* was computed (see Table 20 in page 101). However, the ANOVA analysis reveals that there are not significant differences among the analyzed groups: $(F(6,371) = 0.345, p < 0.913)$ concluding the condition of homogeneity among profiles with a 95% of Confidence Interval for Mean. As a result, a *Test of Between-Subjects Effects* was estimated (see Table 21 in page 102) stating that in the analyzed sample, only 0.6% of the variance in the FN's quality rate is associated to the visitors' educational level.

Quality/satisfaction vs. Nationality Profile

Hypothesis:

H_0 : *There is no correlation in rating the quality/satisfaction of FN when classified by country of origin/nationality.*

H_A : *There is correlation in rating the quality/satisfaction of FN when classified by country of origin/nationality.*

Table 22 (see page 103) illustrates that Germany is the largest sample among FN's visitors with 108 cases and a quality's rate mean of 8.66, followed by United Kingdom with

44 and a mean of 8.5, and in third and fourth position are Holland (37 cases and mean of 8.32) and Spain (36 cases and mean of 8.67) respectively.

In order to assess the equality of variances from the different nationalities when rating the quality of FN as a tourist destination, a Levene's test was computed (see Table 23 in page 104) It exposes that the error variance of the ratings of quality (0.003) is not equal across the nationality groups. Consequently, an ANOVA analysis was conducted concluding that there are not statistically significant differences among nationalities/country of origin when rating the FN's quality/satisfaction: ($F(23,357) = 1.182, p < 0.257$). Additionally, the *Test of Between-Subjects Effects* (see Table 24 in page 105) explains that in the analyzed sample, 7.1% of the variance in the FN's quality rate is related to the visitor's country of origin/nationality.

Quality/satisfaction vs. Gender Profile

Hypothesis:

H_0 : *There is no correlation in rating the quality/satisfaction of FN when classified by gender.*

H_A : *There is correlation in rating the quality/satisfaction of FN when classified by gender.*

According to Table 25 (see page 106) the calculated quality/satisfaction mean for women is lower (8.49) than the quality/satisfaction mean registered by men (8.67). However, in order to test the homogeneity of variances of the quality's rates among the group of women and men, an *Independent Sample t-Test* was estimated (see Table 26 in page 107). The significance value (0.141) states that there is statistical evidence (at the 0.05 confidence level) to affirm that there is no correlation in rating the quality/satisfaction when classified by gender.

Marketing Analysis: Visitors' Economic Injections

The way how the visitors' economic injections are determined could bring insights not only about the tourist's preferences, but also about the allocation of the resources injected and therefore, their implications over the social, environmental and cultural issues.

Visitors' Expenditures vs. Purchasing Power Profile

According to the *Your Trip to Fjord Norway Study*, the surveyed visitors (when classified by income) answered that during their vacations they spent about 40 to 55% of their budgets in natural-environmental activities, 28 to 38% in cultural activities, and 15 to 25% in denominated social activities (see Tables 27, 28 and 29 in pages 108, 109 and 110 respectively). A *One-Way ANOVA* analysis was computed to test the hypothesis of whether or not exist statistically significant differences among the visitors' expenditures on social, environmental and cultural activities when classified by level of income (see Table 30 in page 111). The results revealed that there were not significant differences of means among the profiles with a 95% of significant confidence, concluding that the observed differences can be attributed to random chance. Consequently, a *Test of Between-Subjects Effects* was estimated. This test determined the degree of association between the visitors' expenditures and the purchasing power profiles. We found that in the sample, 4.5, 2.7 and 3.3% of the variance in the visitors' expenditures (on environmental, cultural and social activities respectively) are associated to the purchasing power profiles (see Tables 31, 32 and 33 in pages 112, 113 and 114 respectively).

Estimated Marginal Means of Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

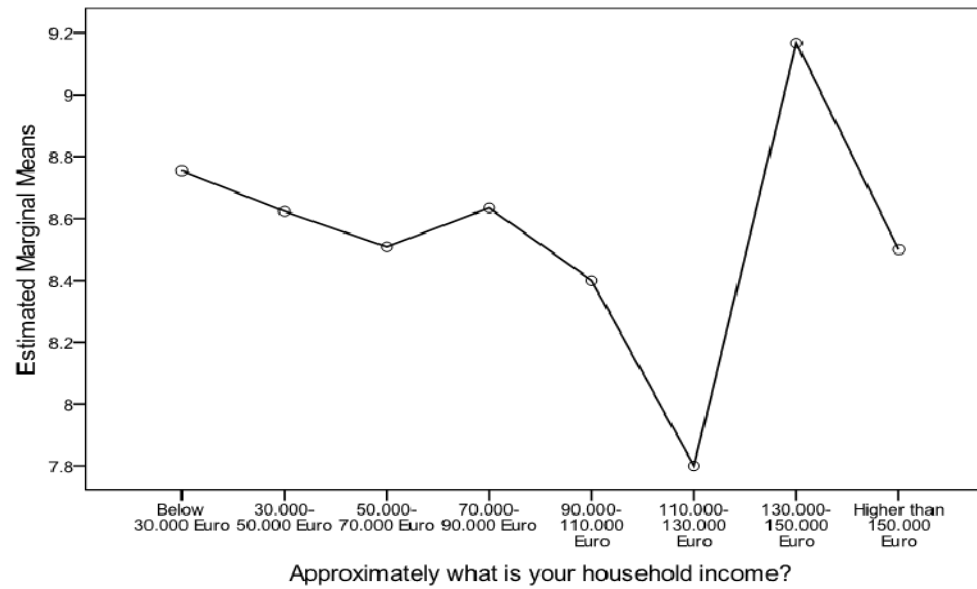


Figure 2. Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Purchasing Power Profile

Table 13

Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Purchasing Power Profiles

Descriptives

Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Below 30,000 Euro	85	8.76	1.264	.172	8.41	8.10	3	10
30,000-50,000 Euro	93	8.62	1.093	.112	8.40	8.85	3	10
50,000-70,000 Euro	81	8.51	1.162	.163	8.20	8.81	2	10
70,000-90,000 Euro	62	8.63	1.103	.163	8.33	8.94	6	10
90,000-110,000 Euro	20	8.40	.754	.169	8.05	8.75	7	10
110,000-130,000 Euro	10	7.60	1.478	.467	6.74	8.66	8	10
130,000-150,000 Euro	8	9.17	.993	.401	8.13	10.20	6	10
Higher than 150,000 Euro	12	8.50	.905	.261	7.93	9.07	7	10
Total	307	8.69	1.132	.286	8.46	8.72	2	10

Table 14

One-Way Analysis of Variance (ANOVA): Fjord Norway Quality's Rate vs. Visitors' Purchasing Power Profiles

ANOVA

Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.110	7	1.587	1.245	.278
Within Groups	361.176	299	1.275		
Total	392.287	306			

Table 15

Test of Between-Subjects Effects: Fjord Norway Quality's Rate vs. Visitors' Purchasing

Power Profiles

Tests of Between-Subjects Effects

Dependent Variable: Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	11.110 ^a	7	1.587	1.245	.278	.028
Intercept	10052.553	1	10052.553	7885.365	.000	.963
Q27	11.110	7	1.587	1.245	.278	.028
Error	381.176	299	1.275			
Total	23043.000	307				
Corrected Total	392.287	306				

a. R Squared = .028 (Adjusted R Squared = .006)

Estimated Marginal Means of Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

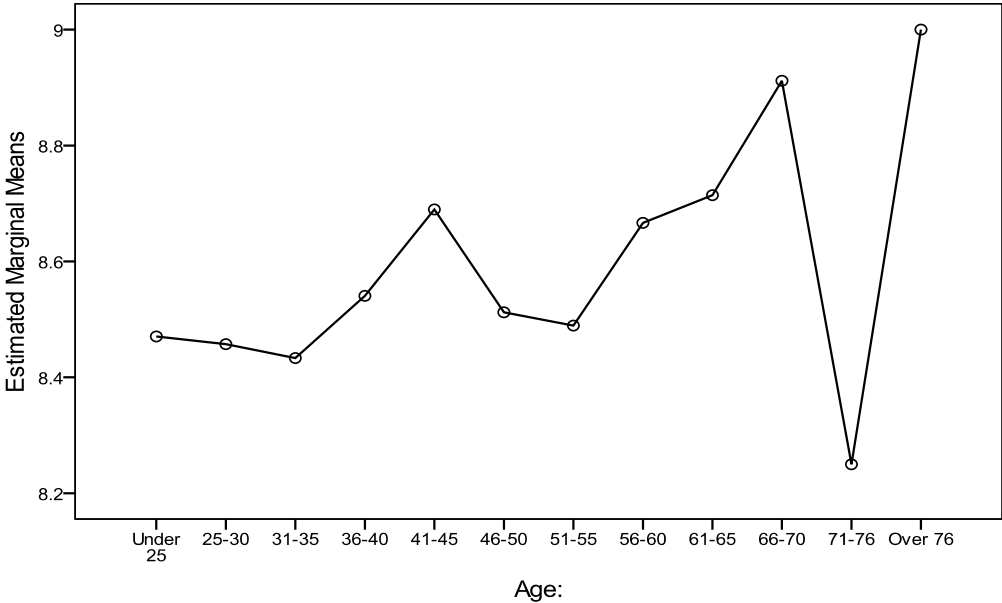


Figure 3. Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Age Profile

Table 16

Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Age Profiles

Descriptives

Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Under 25	34	8.47	1.581	.271	7.92	9.02	2	10
25-30	35	8.46	1.010	.171	8.11	8.80	6	10
31-35	30	8.43	1.501	.274	7.87	8.99	3	10
36-40	37	8.54	.900	.148	8.24	8.84	6	10
41-45	29	8.69	.806	.150	8.38	9.00	7	10
46-50	41	8.51	1.143	.178	8.15	8.87	5	10
51-55	47	8.49	1.397	.204	8.08	8.90	2	10
56-60	39	8.67	1.264	.202	8.26	9.08	3	10
61-65	42	8.71	.995	.153	8.40	9.02	6	10
66-70	34	8.91	.933	.160	8.59	9.24	6	10
71-76	8	8.25	1.165	.412	7.28	9.22	7	10
Over 76	3	9.00	1.000	.577	6.52	11.48	8	10
Total	379	8.58	1.175	.060	8.46	8.70	2	10

Table 17

One-Way Analysis of Variance (ANOVA): Fjord Norway Quality's Rate vs. Visitors 'Age Profiles

ANOVA

Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.751	11	.796	.569	.854
Within Groups	513.381	367	1.399		
Total	522.132	378			

Table 18

*Test of Between-Subjects Effects: Fjord Norway Quality's Rate vs. Visitors' Age Profiles***Tests of Between-Subjects Effects**

Dependent Variable: Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	8.751 ^a	11	.796	.569	.854	.017
Intercept	14458.475	1	14458.475	10335.911	.000	.966
Q25	8.751	11	.796	.569	.854	.017
Error	513.381	367	1.399			
Total	28443.000	379				
Corrected Total	522.132	378				

a. R Squared = .017 (Adjusted R Squared = -.013)

Estimated Marginal Means of Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

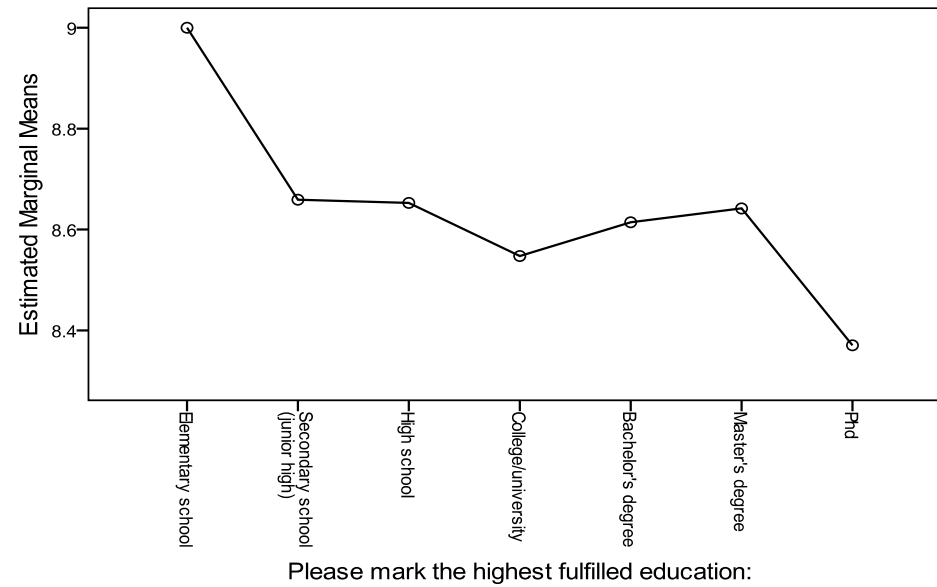


Figure 4. Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Education Profile

Table 19

Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Educational Level Profiles

Descriptives

Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Elementary school	3	9.00	1.000	.577	6.52	11.48	8	10
Secondary school (junior high)	44	8.66	1.363	.205	8.24	9.07	2	10
High school	72	8.65	1.009	.119	8.42	8.89	6	10
College/university	95	8.55	1.210	.124	8.30	8.79	3	10
Bachelor's degree	70	8.61	.982	.117	8.38	8.85	5	10
Master's degree	67	8.64	.995	.122	8.40	8.88	6	10
Phd	27	8.37	1.418	.273	7.81	8.93	3	10
Total	378	8.60	1.127	.058	8.49	8.71	2	10

Table 20

One-Way ANOVA: Fjord Norway Quality's Rate vs. Visitors' Educational Level Profiles

ANOVA

Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.652	6	.442	.345	.913
Within Groups	476.028	371	1.283		
Total	478.680	377			

Table 21

Test of Between-Subjects Effects: FN Quality's Rate vs. Visitors' Educational Level Profiles

Tests of Between-Subjects Effects

Dependent Variable:Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2.652 ^a	6	.442	.345	.913	.006
Intercept	8189.662	1	8189.662	6382.748	.000	.945
Q26	2.652	6	.442	.345	.913	.006
Error	476.028	371	1.283			
Total	28439.000	378				
Corrected Total	478.680	377				

a. R Squared = .006 (Adjusted R Squared = -.011)

Table 22

*Descriptive Statistics: Fjord Norway Quality's Rate vs. Visitors' Nationality Profile*⁸**Descriptive Statistics**

Dependent Variable: Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

Nationality:	Mean	Std. Deviation	N
Australia	8.20	.447	5
Austria	9.50	1.000	4
Belgium	8.17	.983	6
Canada	10.00	.000	2
Czech Republic	9.50	1.000	4
Denmark	8.50	1.243	12
Finland	9.17	.408	6
France	8.43	.787	7
Germany	8.66	1.291	108
Holland	8.32	.852	37
Ireland	8.50	.707	2
Israel	10.00	.000	2
Italy	8.54	.877	13
Lithuania	8.00	2.160	4
Others	8.51	1.375	45
Poland	7.33	3.786	3
Russia	9.00	1.414	2
Slovakia	9.00	.000	2
South Africa	7.00	1.414	2
Spain	8.67	.828	36
Sweden	8.36	1.286	11
Switzerland	8.25	1.035	8
UK	8.50	1.089	44
USA	8.94	1.181	16
Total	8.57	1.187	381

⁸ Due to the SPSS analysis data requirements, "Others" is determined by anonymous participants, and those whose nationality is represented by only one case.

Table 23

Levene's Test: Fjord Norway Quality's Rate vs. Visitors' Nationality Profile

**Levene's Test of Equality of Error
Variances^a**

Dependent Variable: Rate the quality of Fjord
Norway as a tourist destination, 1 being the
lowest and 10 the highest:

F	df1	df2	Sig.
2.064	23	357	.003

Tests the null hypothesis that the error
variance of the dependent variable is
equal across groups.

a. Design: Intercept + Q23

Table 24

Test of Between-Subjects Effects: Fjord Norway Quality's Rate vs. Visitors' Nationality

Profile

Tests of Between-Subjects Effects

Dependent Variable: Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	37.880 ^a	23	1.647	1.182	.257	.071
Intercept	8077.204	1	8077.204	5799.159	.000	.942
Q23	37.880	23	1.647	1.182	.257	.071
Error	497.238	357	1.393			
Total	28549.000	381				
Corrected Total	535.118	380				

a. R Squared = .071 (Adjusted R Squared = .011)

Table 25

Independent Sample t-Test: Fjord Norway Quality's Rate vs. Visitors' Gender Profile

Group Statistics

		N	Mean	Std. Deviation	Std. Error Mean
Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:	Female	183	8.49	1.244	.092
	Male	192	8.67	1.104	.080

Table 26

Independent Sample t-Test: Fjord Norway Quality's Rate vs. Visitors' Gender Profile

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:	Equal variances assumed	2.171	.141	-1.441	373	.150	-.175	.121	-.413	.064	
	Equal variances not assumed			-1.437	362.878	.152	-.175	.122	-.414	.064	

Table 27

*Descriptive Statistics: Visitors' Environmental Expenditures vs. Purchasing Power Profile***Descriptive Statistics**

Dependent Variable: I spent (%) of my budget in nature-environmental experiences/activities:

Approximately what is your household income?	Mean	Std. Deviation	N
Below 30.000 Euro	44.412	22.5754	51
30.000-50.000 Euro	45.330	22.4488	88
50.000-70.000 Euro	42.383	21.4485	60
70.000-90.000 Euro	53.659	21.1644	49
90.000-110.000 Euro	56.263	27.4223	19
110.000-130.000 Euro	52.778	18.8930	9
130.000-150.000 Euro	41.667	22.2860	6
Higher than 150.000 Euro	39.545	26.5004	11
Total	46.605	22.7081	293

Table 28

*Descriptive Statistics: Visitors' Cultural Expenditures vs. Purchasing Power Profile***Descriptive Statistics**

Dependent Variable: I spent (%) of my budget in cultural experiences/activities:

Approximately what is your household income?	Mean	Std. Deviation	N
Below 30.000 Euro	29.412	12.4759	51
30.000-50.000 Euro	31.678	19.8749	87
50.000-70.000 Euro	35.717	19.1037	60
70.000-90.000 Euro	27.333	15.2618	49
90.000-110.000 Euro	28.053	19.9819	19
110.000-130.000 Euro	31.667	20.7666	9
130.000-150.000 Euro	32.500	15.4110	6
Higher than 150.000 Euro	36.182	25.5610	11
Total	31.333	18.1092	292

Table 29

*Descriptive Statistics: Visitors' Social Expenditures vs. Purchasing Power Profile***Descriptive Statistics**

Dependent Variable: I spent (%) of my budget in social experiences/activities:

Approximately what is your household income?	Mean	Std. Deviation	N
Below 30.000 Euro	25.700	19.1133	50
30.000-50.000 Euro	22.621	20.7012	87
50.000-70.000 Euro	22.085	15.7001	59
70.000-90.000 Euro	18.548	12.2827	48
90.000-110.000 Euro	14.368	13.1581	19
110.000-130.000 Euro	15.556	11.0240	9
130.000-150.000 Euro	25.833	19.6002	6
Higher than 150.000 Euro	24.273	17.7431	11
Total	21.735	17.4995	289

Table 30

One-Way ANOVA: Visitors' Expenditures vs. Purchasing Power Profile

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
I spent (%) of my budget in nature-environmental experiences/activities:	Between Groups	6705.924	7	957.989	1.898	.070
	Within Groups	143866.078	285	504.793		
	Total	150572.002	292			
I spent (%) of my budget in cultural experiences/activities:	Between Groups	2607.992	7	372.570	1.140	.338
	Within Groups	92823.876	284	326.845		
	Total	95431.868	291			
I spent (%) of my budget in social experiences/activities:	Between Groups	2895.437	7	413.634	1.363	.221
	Within Groups	85299.897	281	303.558		
	Total	88195.334	288			

Table 31

*Test of Between-Subjects Effects: Expenditures vs. Purchasing Power Profile***Tests of Between-Subjects Effects**

Dependent Variable: I spent (%) of my budget in nature-environmental experiences/activities:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	6705.924 ^a	7	957.989	1.898	.070	.045
Intercept	288953.661	1	288953.661	572.420	.000	.668
Q27	6705.924	7	957.989	1.898	.070	.045
Error	143866.078	285	504.793			
Total	786978.890	293				
Corrected Total	150572.002	292				

a. R Squared = .045 (Adjusted R Squared = .021)

Table 32

Test of Between-Subjects Effects: Expenditures vs. Purchasing Power Profile

Tests of Between-Subjects Effects

Dependent Variable: I spent (%) of my budget in cultural experiences/activities:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2607.992 ^a	7	372.570	1.140	.338	.027
Intercept	130290.576	1	130290.576	398.632	.000	.584
Q27	2607.992	7	372.570	1.140	.338	.027
Error	92823.876	284	326.845			
Total	382108.890	292				
Corrected Total	95431.868	291				

a. R Squared = .027 (Adjusted R Squared = .003)

Table 33

Test of Between-Subjects Effects: Expenditures vs. Purchasing Power Profile

Tests of Between-Subjects Effects

Dependent Variable: I spent (%) of my budget in social experiences/activities:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2895.437 ^a	7	413.634	1.363	.221	.033
Intercept	58205.597	1	58205.597	191.744	.000	.406
Q27	2895.437	7	413.634	1.363	.221	.033
Error	85299.897	281	303.558			
Total	224716.890	289				
Corrected Total	88195.334	288				

a. R Squared = .033 (Adjusted R Squared = .009)

Limitations

Estimate the impact of an economic activity over the social, cultural, environmental or economic issues is a complex task to achieve. The analysis requires not only the use of economic theories, but also a multitasking, pragmatic, and holistic perspective in order to manage different disciplines. The result of such major multidisciplinary assessment is useful in the proportion that every field (social, economic, environmental and cultural) is considered and coped when providing the conclusions. For the purpose of the study and considering its inherent limitations, the analysis of the tourism yield shock intends to isolate the effects by keeping all other variables constant. Particularly, the present study should be analyzed from the perspective that is an exploratory and partial research that aimed to provide insights of the tourism yield in the Fjord Norway region. The adopted broader perspective in this study presents limitations, generalizations, and assumptions that have to be considered when evaluating the methodology, results, and final conclusions.

Some of the remarkable limitations of the study are related to the tourism yield assumptions. The Value Added (VA) concept has been adopted as the closest meaning to the tourism yield or net economic benefit. Due to the data availability in the National Accounts, the VA analyzed covered exclusively the period 2000-2006. Therefore, the use of an extended period of analysis would bring more accurate estimations. Referring to the use of multipliers as impact analysis indicators, they should be evaluated from a preliminary and exploratory perspective. Consequently, it is highly recommended for further studies and for more precise estimations, the use of more systematic methodologies such as the Input-Output (I-O) analysis, or the Computable General Equilibrium (CGE) model.

The Fjord Norway Sustainability Assessment represents a general and exploratory approach. As such, the generalizations during the sustainability analysis and LP model, specifically over the *Biocapacity* (BC) and *Ecological Footprint* (FE) estimations result in a

limited assessment of the Fjord Norway region. A detailed EF and BC estimations in the region are required for a more accurate sustainability evaluation. In addition, it is highly recommended the insertion of more precise decision variables as well as the inclusion of more detailed resource constraints in the LP analysis model.

Survey: Your Trip to Fjord Norway

Some of the most important limitations of this study are as follows: the data was collected prior to constructing the hypotheses presented, including the literature review and methodology. This was due to the limitations of time when planning the present thesis research (developed in four months). Accordingly, the sampling was obtained through a follow-up survey answered by only international visitors who volunteered to participate during a previous questionnaire conducted during the summer 2009. Also, the volunteered participants by answering the survey participated in a prize lottery as an incentive. The prize consisted in being able to win unlimited flights for a two-week period within Norway during the summer 2010. Additionally, the survey was written in English and then translated to Spanish, Russian and German, which could lead to misunderstandings and non-fulfillment of the required information. These handicaps and general assumptions could cause the research to be biased and therefore skew the results, and not reflect the intended population's perceptions.

Conclusions and Recommendations

During the peak of the global financial crisis in 2008 there were voices pointing out the importance of the service sector as an economic counterweight assuming its countercyclical properties. Policymakers present this sector as an economic variable that contributes to minimize the effects during recessive periods in a local economy (Cooper, 2008). The tourism industry emerges as an alternative income channel for the mentioned challenges in the Norwegian economy. Consequently, it raises many questions: how to boost the Norwegian tourism industry? And which are the tools and strategies to evaluate, optimize and most importantly, to make the industry sustainable? Tourism Yield appears as the concept that could help to answer some of these questions. This concept has been defined by a variety of studies as the gains (economic and non-economic) obtained by the tourism industry, which benefits a community in the environmental, social and cultural levels.

With this in mind, this study aimed to examine the tourism yield and sustainability issues from the Fjord Norway (FN) region study case methodology. This implied to explore some of the costs and benefits involved as well as to propose analysis tools, indicators and strategies in order to measure and increase the tourism yield in the Fjord Norway Region in particular, and in the Norwegian tourism industry in general. The Fjord Norway case study served as an instrument for theory building and theory testing by applying macroeconomic and sustainability theories, descriptive and inferential statistics, and Optimization Linear Programming (LP) modeling.

With an empirical analysis of the Fjord Norway, the study intended to provide insights of the tourism yield impacts on the region. The methodology was divided in three main components:

- A macroeconomic assessment of the tourism yield (using TSAs),

- A proposal optimization model of tourism yield (sustainability and LP analysis).
- A marketing analysis (using a survey as instrument)

Tourism Yield Assessment and the Optimization Model

The Value Added (VA) concept was chosen as a tourism yield measure of the net economic benefits generated by tourism industries in the Fjord Norway region (Rogaland, Hordaland, Sogn og Fjordane, and Møre og Romsdal). The VA shock in Fjord Norway was calculated in: 17,262 mill. NOK (annual average). The economic injections to the region are mainly provided by Hordaland and Rogaland, and in less proportion Møre og Romsdal and Sogn og Fjordane respectively. In terms of economic impact, a multiplier analysis was used to estimate the tourism yield (VA) impact (isolating the effects by keeping all other variables constant) over macroeconomic variables. According to it, the FN tourism activity represented approximately 7 times (or 15%) the change in the national GDP. A positive signal of the FN tourism impact on the Norwegian economy occurs when this multiplier decreases, while a negative signal takes place when the multiplier increases. Likewise the GVA multiplier states that for every NOK from the tourism activity it was generated 1.21 NOK of output for the regional economy. In terms of employment, the tourism industries in Fjord Norway region registered an annual average reduction of 50 jobs, resulting in a negative multiplier impact of -0.003. In summary, the multiplier has served as an expression of the GVA and employment potential per extra NOK injected by the FN tourism activity.

According to the *Living Planet Report 2008*, the sustainability concept is one of the drivers for the solution of the ecological overshoot (WWF, 2008). The consumption of the *Biocapacity* has become a major concern due to the unbalances between the supply of ecological capital and the demands from the economic activities. Consequently, there is a necessity to develop equilibrium models to maximize industries' profitability ensuring that the

ecological capital remains productive indefinitely for the wellbeing of future generations. Due to the tourism sector is an ecological capital industry consumer, a sustainability assessment based on the *Ecological Footprint* (EF) approach was computed. According to the *Living Planet Report 2008* the *Ecological Footprint* (EF) measures the humanity's demand on the biosphere, while the *Biocapacity* (supply side) is defined as "the area of biologically productive land and sea required to provide the resources we use and to absorb our waste" (WWF, 2008, p. 14). The biologically productive area is expressed in global hectares (gha), defined by the report as the hectares with world-average biological productivity. Fjord Norway EF and *Biocapacity* were estimated and the analysis concluded that FN demand exceeds the total region's capacity to regenerate resources by about 40 %.

The tourism' EF in the region was estimated for the sustainability assessment. The visitors' demand represents approximately 17% of the ecological supply in FN. As result, the demand over the biologically productive area is increased due to the visitors' shock producing an overshoot of 57%. It represents a negative effect that in the absence of tourism would not occur. In other words, if the population's demands (summed to the visitors' demand) continue at the same rate, it will be required the equivalent of halve of the Fjord Norway region to maintain the registered level of lifestyles consumption.

The use of a Linear Programming (LP) model is proposed (from an exploratory perspective) as an optimization tool that seeks the maximization of the net economic benefits (yield) in the FN region. The model takes in consideration two decision variables: *Tourism industry* and *Rest of industries*, as well as the resources constraints, and the yield marginal contribution. The maximization of the *Objective Function* results in X_1 (tourism industry) = 0 and X_2 (Rest of Industries) = 887,596 NOK (per capita), thus maximizing the Fjord Norway Yield in: 197,646 mill. NOK per year. According to the LP model proposed the maximization of yield in the Fjord Norway Region excludes the tourism industry ($X_1 = 0$) from the

optimization formula. Either the model proposed or its resolution does not pretend to be conclusive, but only provide insights, and open the debate and analysis around the tourism industry yield-sustainability.

Tourism Yield: A Marketing Analysis

When a tourist evaluates to visit a destination, she/he has basically two variables to consider: price and quality, and thus the importance to consider them when trying to maximize the tourism yield. Assuming that a destination faces a downward demand then, as price and quality are increased the destination attracts mostly high profiled visitors but in less number, with positive consequences not only in terms of profitability, but also in terms of environmental sustainability (Yeoman & Ingold, 1997). Also, the way how the visitors' economic injections are determined could bring insights not only about the tourist's preferences, but also about the allocation of the resources injected and therefore, their implications over the social, environmental and cultural issues.

In order to explore the previous assumptions and provide insights of the relationship destination's quality/satisfaction, and visitors' expenditures vs. visitor's profile in the Fjord Norway Region, descriptive and inferential statistics were conducted. According to the results there are no statistically significant differences. When the profile was defined by nationality/country of origin, a *Test of Between-Subjects Effects* determined that in the analyzed sample, 7.1% of the variance in the FN's quality rate was related to the visitor's country of origin. Additionally, 4.5, 2.7 and 3.3% of the variance in the visitors' expenditures (on environmental, cultural and social activities respectively) were associated to the purchasing power profiles. However, in order to provide generalizations and conclusive evidences around the visitors' profile and its associations with tourism yield and sustainability, it is imperative to conduct deeper investigations on the topic.

Final Remarks

To estimate the impact of an economic activity (specifically the tourism yield assessment) from a broader approach is a complex task to achieve. The analysis requires not only the use of economic theories, but also a multitasking, pragmatic, and holistic perspective in order to manage different disciplines such as sustainable economics or ecology. The result of such a major multidisciplinary assessment is useful in the proportion that every field is considered and covered when providing the conclusions. Hence, it is highly recommended that further economic studies use more complete and technical methodologies such as the Input-Output (I-O) analysis, or the Computable General Equilibrium (CGE) model.

Particularly, the present study should be analyzed from the perspective that it is an exploratory and preliminary research with limitations, generalizations, and assumptions that have to be considered when evaluating the methodology and final conclusions. Consequently, one should keep in mind that this study represents merely a starting point and that it intended to serve as a conceptual tool rather than a strict technical economic assessment. Evidently, the results and analysis presented should be placed in context to show a degree of consistency and accuracy significant enough to be reliable for the stakeholders or to create generalizations. The revelations of the study however, open new challenges for further investigations around tourism yield and tourism sustainability.

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Appendix A

Survey Instrument: Invitation

This is a follow-up survey from the questionnaire you participated in during your vacation in Fjord Norway previous summer of 2009. You volunteered to participate in this follow-up survey when you entered your e-mail address on the questionnaire. By answering this survey you will participate in a prize draw where you can win unlimited flights for a two-week period within Norway this summer!

In relation to this we will ask you to recall your vacation to Fjord Norway and answer some questions. The results of this survey will first of all be used as a part of two Master's thesis at the University of Stavanger, but also as a contribution to a Norwegian tourism project (Tourism Yield).

All answers will remain anonymous and confidential. For more information and questions, please contact Dr. Truls Engstrøm at the University of Stavanger at e-mail: truls.engstrom@uis.no

Click on the link below to answer the survey.

Appendix B

Survey Instrument: Reminder

This is just a reminder to assure that you have received the survey sent to you by e-mail. As the results will be a part of our master's thesis, we are very dependent on your answers, so we really appreciate if you would take some of your time to help us :) Don't forget, you can win unlimited flights for a two-week period within Norway this summer!

This is a follow-up survey from the questionnaire you participated in during your vacation in Fjord Norway previous summer of 2009. You volunteered to participate in this follow-up survey when you entered your e-mail address on the questionnaire. In relation to this we will ask you to recall your vacation to Fjord-Norway and answer some questions.

The results of this survey will first of all be used as a part of two Master's thesis at the University of Stavanger, but also as a contribution to a Norwegian tourism project (Tourism Yield).


All answers will remain anonymous and confidential. For more information and questions, please contact Dr. Truls Engstrøm at the University of Stavanger at e-mail:

truls.engstrom@uis.no

Click on the link below to answer the survey

Appendix C

Survey Instrument: *Your Trip to Fjord Norway*



Explore Norway
this summer

Two weeks of
unlimited
flights

35
destinations
to discover

Survey: Your trip to Fjord Norway

Please reply to the best of your knowledge and as truthfully as possible. In advance, we really appreciate your help in this project.

Motivation for travelling

1) What was your motivation for travelling to Fjord Norway? Please specify how much you agree/disagree with the following alternatives motivating you for travelling to Fjord Norway:

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Being close to nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have fun/be entertained	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
See as much as possible in time available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nightlife and entertainment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enjoy scenery/nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not touristy/crowded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Museums and cultural attractions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meet people with similar interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit historical places	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning about the natural environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To engage in nature-based activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be together as a family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rest and relaxation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
See mountains/fjords	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Wilderness experience	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Amusement-and team parks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Shopping	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Visit family/friends	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Experience smaller towns/villages	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



Travel preferences

2) What was the transportation you used to Fjord Norway? You may check several alternatives.

- Airplane
- Car
- Train
- Bus
- Recreational vehicle (Motor home/caravan etc)
- Ferry
- Sailboat
- Cruise ship
- Boat
- Motorbike
- Bicycle
- Other, please specify here



3) What was the transportation you used during your vacation in Fjord Norway? You may check several alternatives.

- Airplane
- Car
- Train
- Bus
- Recreational vehicle (Motor home)
- Ferry
- Sailboat
- Cruise ship
- Boat

Climbing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sailing and yachting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hiking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Glacier walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visiting cultural attractions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Riding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sunbathing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Summer skiing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roundtrips	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whale safari	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6) Other activities, please specify:

7) When you travelled to Fjord Norway, what travel party did you choose to travel with?

By my self

Family/relatives

Friends

spouse/partners

Other, specify here

8) How long was your holiday in Fjord Norway? Please type in number of days:

Environmental behavior

9) When answering the next statements please think about your environmental behavior. Indicate how much you agree or disagree with the statements:

Strongly disagree Disagree Undecided Agree Strongly agree

When travelling I prefer nature-based destinations

I prefer locations that are as remote as possible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer to observe nature in a wild and unrestricted setting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to find out as much about the natural environment of a destination as I can before I actually go there	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I want to learn as much as possible about the natural environment of the cities that I visit while I am there	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually do what I can to leave the site of areas in better condition than when I arrive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycling of waste is an environment-friendly effort that everybody should do while on vacation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is good for a destination to focus on environmental issues but it does not influence my destination choice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will only use accommodations and tour operators that have a proven track record of environmental sustainability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I recycle my garbage at home because I want to be environment-friendly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I save energy at home due to environmental concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I use public transportation to save the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find it easier to practice 'environment-friendly' behavior at home than when I am travelling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I am travelling I do not worry about the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to support the local economy of places that I visit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I am travelling I am more concerned about costs of products and services than I am about their negative environmental impact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My presence in Fjord Norway did not harm the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Attitudes toward the environment

) When answering the next statements, please think about your attitudes toward the the environment. Indicate how much you agree or disagree with the statements:

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Humans must live in harmony with nature in order to survive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The balance of nature is very delicate and easily upset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nature can have value beyond the social, economic or cultural values held by humans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plants and animals exist primarily to be used by humans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humans have the right to modify the natural environment to suit their needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

When humans interfere with nature, it often produces disastrous consequences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mankind was created to rule over the rest of nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mankind is severely abusing the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The present generation should ensure that the environment is maintained or enhanced for the benefit of future generations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I perceived Fjord Norway as a highly environment-friendly destination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I consider myself to be an environment-friendly tourist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Assuming that you spent all your travel budget in 3 types of experiences/activities (cultural, environmental, and social):

The sum of your 3 answers should be 100% of your travel budget

11) I spent (%) of my budget in cultural experiences/activities:

12) I spent (%) of my budget in nature-environmental experiences/activities:

13) I spent (%) of my budget in social experiences/activities:



According to the quality of Fjord Norway as a tourist destination:

14) The prices in Fjord Norway are:

Very low
 Low
 Medium
 High
 Very high

15) Rate the quality of Fjord Norway as a tourist destination, 1 being the lowest and 10 the highest:

1
 2
 3
 4
 5
 6
 7
 8
 9
 10

16) Have you experienced a similar destination with higher quality than Fjord Norway?

• HTMLCONTROL


17) If "Yes", please name that destination:


18) Rate the quality of that destination 1 being the lowest and 10 the highest:

1
 2
 3
 4
 5
 6
 7
 8
 9
 10



Based on all your previous global travel experience, please rate Fjord

Cultural activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cultural promotion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local traditions and customs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22) Social/society issues						
	Very low	Low	Average	High	Very high	I am not sure
Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Community involvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Host involvement with tourists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Crime and harassment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government involvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NGOs involvement (Non-governmental organizations)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health and safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Equality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						
<hr/>						
Demographics						
23) Nationality:						
<input type="text"/>						
<hr/>						
24) Gender:						
<input type="checkbox"/>	Female					
<input type="checkbox"/>	Male					
<hr/>						
25) Age:						
<input type="checkbox"/>	Under 25					
<input type="checkbox"/>	25-30					
<input type="checkbox"/>	31-35					
<input type="checkbox"/>	36-40					
<input type="checkbox"/>	41-45					
<input type="checkbox"/>	46-50					
<input type="checkbox"/>	51-55					
<input type="checkbox"/>	56-60					

<input type="checkbox"/>	61-65
<input type="checkbox"/>	66-70
<input type="checkbox"/>	71-76
<input type="checkbox"/>	Over 76
	
<hr/>	
26) Please mark the highest fulfilled education:	
<input type="checkbox"/>	Elementary school
<input type="checkbox"/>	Secondary school (junior high)
<input type="checkbox"/>	High school
<input type="checkbox"/>	College/university
<input type="checkbox"/>	Bachelor's degree
<input type="checkbox"/>	Master's degree
<input type="checkbox"/>	PhD
<hr/>	
27) Approximately what is your household income?	
<hr/>	
<input type="checkbox"/>	30.000-50.000 Euro
<input type="checkbox"/>	50.000-70.000 Euro
<input type="checkbox"/>	70.000-90.000 Euro
<input type="checkbox"/>	90.000-110.000 Euro
<input type="checkbox"/>	110.000-130.000 Euro
<input type="checkbox"/>	130.000-150.000 Euro
<input type="checkbox"/>	Higher than 150.000 Euro
<input type="checkbox"/>	Prefer not to answer
<hr/>	
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