WHERE UX AND SUSTAINABILITY MEET

FACILITATING ECO-BEHAVIOUR IN CRUISE SHIP CABINS

A GUIDELINE FOR EXPERIENCE DESIGNERS

HESAM PAKBEEN
To my family for their endless love.

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ABSTRACT

Cruising is one of the notorious segments of leisure industry, in terms of environmental footprints. Therefore, cruise industry is endeavoring to decrease environmental impacts of the cruise lines. Referring to the increasing number of passengers, this thesis highlights the role of passengers in overall consumption of ships, and argues that engaging passengers in environmental stewardship of the industry is of significant importance. However, due to the fundamental role of UX in cruising, the topic is still controversial. Engaging passengers in sustainability improvements of cruise lines raises questions about its influence on passengers’ pleasure in cruising experience. For this reason, the present thesis suggests that passengers’ engagement should occur through pleasurable experiences.

Due to the nature of cruising experience, the current research suggests that cruise lines provide passengers with facilitating conditions encouraging eco-behavior. In addition, combination of design-strategy and communication is essential for passengers’ eco-cooperation. Stating the influence of cabins’ consumption on the overall footprints of cruise ships, this thesis focuses on facilitating eco-behavior of passengers in cabins.

Two Constructive Design Research studies are conducted in the current thesis. The first research seeks to address potential passengers’ general perception of cruising experience. As a result, participants’ desires, preferences and concerns in regard with cruising experience were obtained. Additionally, potential passengers’ insights into experiencing iconic sustainability activities onboard such as DIY workshops was studied. The second research focuses on eco-behavior in cabins, in which participants compare a number of design concepts. The study aims to determine participants’ interest and opinion about concepts for facilitation conditions in cabins.
The findings confirm that the quality of experiences has a significant role in potential passengers’ eco-cooperation. The studies also prove that utility is of vital importance in potential passengers’ cooperation with environmental stewardship of the industry. This suggests that experience designers of cruising sector should focus on strategies in which passengers receive incentives for their cooperation.

The present thesis also shows that communication for passengers’ cooperation should start before the journey, convincing passengers about their important role in sustainability. Using 4E’s model (Intervention of Enable, Engage, Exemplify and Encourage), the present work suggests a guideline for experience designers to create design-strategies targeting eco-cooperation of cruise passengers.

Key words: Cruise ships, UX, Eco-behavior, Cabin, Facilitation strategies.
1. INTRODUCTION

Cruising as a segment of travel and tourism industry is rapidly growing and attracting increasing interest from customers. Accordingly, the cruise industry is extremely competitive and cruise lines are endeavoring to attract more passengers by providing superior services. Therefore, cruise companies are diligently seeking to create pleasing yet unique experiences for passengers. Hung and Petrick (2011) emphasize the crucial importance of “user-experience: UX” in the field and stress the role of “experience” in passengers’ motivation to take a cruise. Major cruise companies such as Royal Caribbean International, Carnival Cruise Lines and Norwegian Cruise Line aspire to attract more customers by promoting the unique experience they can provide. Given these facts, user-experience is among the main competitive priorities of cruise lines in terms of creating exceptional experiences for passengers. In addition to the prominence of user-experience in the context of cruising, the industry concerns other critical issues such as environmental impacts of the ships.

In terms of environmental impacts, cruising is one of the notorious segments of leisure and tourism industry (World Cruise Industry Review, 2013). To illustrate, the waste produced by cruise ships accounts for one-fourth of the whole waste of the shipping industry, while cruise ships include merely one percent of the number of merchant vessels worldwide (Butt, 2007).

A recent study conducted by International Maritime Organization (IMO) estimates that in 2012, International shipping emitted 2.2 percent of the total CO2 emission in the world (IMO, 2015). Moreover, cruise ship industry is also widely blamed for generating significant emission of air pollutants and greenhouse gasses such as, CO (Carbone monoxide), Sox (Sulfur oxides), NOx (Nitrogen oxides) and CO2 (Carbon dioxide) (Howitt et al., 2010). For example, a study shows that cruise ships and passenger ferries are responsible for 9.2% of the total CO2 emission from shipping worldwide (Buhaug et al., 2009).

Consequently, stringent regulations are increasingly imposed on the cruising sector. For instance, International Maritime Organization (IMO) steadily publishes the most recent guidelines and regulations for the industry to decrease the environmental impacts of ships.
Namely, the Energy Efficiency Design Index (EEDI) compels new-built ships to become 20% and 30% more efficient by 2020 and 2030 respectively (Hon and Wang, 2011). Furthermore, the majority of cruise lines conduct sustainability initiatives reported annually, to prove the effort of the company regarding environmental and social responsibilities (See, e.g., Holland America Line Sustainability report, 2009). Despite the promising progress of cruise industry in reducing the environmental impacts (Segercrantz, 2011; Bazari, 2010), cruise companies seek to find innovative ways, creating a more sustainable industry (Klein, 2011).

Recent developments in technology and sustainability studies have resulted in remarkable improvements of cruise ships. For example, the industry is considerably concentrating on the operational and waste impacts of the ships. The aim is to reduce enhance the waste management and reduce air emissions. Yet, energy and water consumption inside ships is of paramount importance for cruise lines (CLIA, 2014). In recent years, technological advances have resulted in considerable energy management inside cruise ships. For instance, Royal Carrabin reported that energy efficiency of its’ Oases Class cruises has raised by 16-25% in 2012, comparing to the ships built in 2002 (RCCL, 2012). In addition to developments in energy-efficiency technologies, cruise lines are gradually trying to involve passengers in their environmental stewardship.

Cruise critic (2014) categorized the latest environmentally friendly practices conducted by the major cruise lines and highlighted passenger-oriented initiatives, emphasizing policies for encouraging cruisers to participate in the environmental stewardship. That underlines the potential role of cruise passengers in reducing the impacts of shipping industry on the environment. However, cruise lines still prefer to cautiously move towards user-oriented initiatives for sustainability, reasoning that involving passengers may affect the cruising experience and result in less satisfaction.

Few studies have tried to address the relation between experience-related factors of a product and users’ sustainable behavior (Luchs et al., 2011 and 2012). Yet, the topic in ship design is not widely discussed. A study conducted by Murto et al. (2014) highlights the importance of engaging passengers (and potential passengers) in early stages of product development in
ship design, aiming for environmentally sustainable design. However, the influence of UX on sustainability has not been thoroughly examined together in the context of a ship design and there is still a need for studying the topic. The present research is a study on potential approaches to enhance sustainability through user-experience in the context of cruise ships. To achieve this, a thorough understanding of users’ needs, wants, and desires is needed. That in turn, emphasizes the prominence of involving passengers and potential cruisers in the early phases of concept design which has been overlooked before (Mortimer, 2010).

Data from several sources indicate noticeable growth of cruise passenger numbers worldwide during the last four decades (Quartermaine and Peter, 2006; Ward, 2014; CLIA, 2014; Cruise Industry News, 2014). CLIA, Cruise Lines International Association (2015) estimates the number of global ocean cruise passengers at 23 million in 2015, which reached slightly over 7 million passengers in 2000. Cruise customers consist of a large variety in terms of social and cultural backgrounds. As for origins, over 13 million passengers from North America, around 6 million from Europe and 2 million from Asia travelled by cruise ships in 2015 (Cruise Market Watch, 2015). This thesis suggests that the growing number of passengers provides cruise lines with opportunities to accelerate the progress of sustainability. However, involving passengers in environmental stewardship of the industry requires concerted efforts to research, design and communication strategies.

Addressing the important role of passengers in shaping a more sustainable cruising industry, this study investigates the possibility of passengers’ cooperation with environmental sustainability improvements of cruise lines. The present thesis consists of three main parts. Firstly, the research background is presented, which focuses on mapping the role of UX in cruising context. Following that, the importance of involving passengers in sustainability improvements of cruise lines is discussed. Stating the crucial role of UX in cruising, the thesis suggests that in order to involve passengers in sustainability improvements of ships, facilitating conditions are needed. The present research seeks to study how experience designers can facilitate eco-behavior of passengers and involve them in the environmental stewardship of cruise lines.
In this study, the cabin area is chosen as the “use” context. Nevertheless, the thesis shows that facilitating eco-behavior of passengers in cabins requires studies of larger contexts of behavior. In doing so, the next phase of the thesis includes two design-research studies. The first design-research seeks to investigate participants’ overall perspective on cruising experience, cabin experience and experiencing iconic sustainability activities onboard. The second design-research focuses on facilitating participants’ eco-behavior in cabins. In doing so, the study investigates respondents’ assessments of design concepts aiming for facilitation of eco-behavior. Based on the results of the studies, the thesis proposes design strategies and guidelines for cruise lines to facilitate passenger’s eco-cooperation while providing a pleasant cruising experience.
RESEARCH QUESTION AND SUB-QUESTIONS

How to engage potential/passengers in environmental stewardship of cruise lines?

How to create facilitating conditions for passengers’ involvement in sustainability improvements of cruise ships?

What are the UX potentials and constraints of a cruise ship for facilitating eco-behavior of passengers in cabins?

What strategies can be used to facilitate eco-behavior in cabins?
2. STUDY BACKGROUND

2.1. Cruising: An Experience

The last two decades have witnessed a significant change in service sectors. In 1998, Pine and Gilmore illustrated the history of economic progress and named the new stage as “experience economy”. In the experience economy, service providers make the effort to create memorable experiences for customers. Accordingly, study of User Experience (UX) has become an important topic for service industries.

Tourism is one of the most experience-driven industries. Equivalently, cruising is firmly associated with passengers’ experience. One study (Hung and Petrick, 2011) on cruising motivations shows that seeking pleasurable experiences is the main trigger of passengers’ motivation to take a cruise. Similarly, Levander et al. (2003) present the future trends of cruise and ferry industry, and demonstrate that creating “unique experiences” is rapidly becoming one of the leading concerns of the ship industry. Thus, ship companies competitively try to offer pleasurable experience to customers by creating new products and services. Chin (2008) defines the role of cruise companies as the “producers of pleasurable experience” and explains that cruise lines should create experiences for the “consumption of pleasure” by passengers. This underlines the importance of “experience design” in the industry.

2.1.1. Experience: Rather Definable, Very Designable

In the field of Design, the concept of Experience Design is always used with the term User Experience (UX) that is increasingly becoming a major topic in design studies. Yet, it has not been defined clearly in the literature (Law et al., 2009). ISO (2010) suggests a definition for UX that is being used widely by researchers. ISO defines UX as “person’s perceptions and responses resulting from the use and/or anticipated use of a product, system or service”. Following that, ISO describes UX as a complex of emotions, beliefs, preferences, perceptions, physical
and psychosocial responses, behaviours and accomplishments. In addition, the definition underlines several factors that affect UX such as brand image, presentation, functionality (of the system, service or product), internal state of user, prior knowledge and experiences, skills and personality (of person). Finally, ISO highlights the importance of the “Context” in the quality of experience.

### 2.1.2. Fundamentals Of Ux

The present thesis seeks to address relation between experience and sustainability and finding ways to enhance passengers’ eco-behaviour without reducing the pleasure of cruising experience. Therefore, influential factors on experience need to be discussed. Forlizzi and Ford (2000) illustrate factors that influence experience by breaking the experience apart (Fig.1). They define the experience as in interaction between user and product in the context of use, embedded in social and cultural factors. Frolizzi and Ford’s model provides a basic image for understanding Anderson’s diagram of experience.

![Diagram](image)

**Fig.1. Influential factors on experience (Forlizzi and Ford, 2000)**

Anderson (2009) suggests a more comprehensive diagram of influential factors on experience design and divides it into the upper part (function) and root part (meaning) (Fig.2). He names the main elements of the experience as “people” and “activities”, both placed in the “context”.

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As for context, people are affected by internal context, and activities are surrounded by external context. As shown in the diagram, whereas internal context is mainly set in the root part (meaning), containing relational, historical or emotional context, external context spreads in both upper part (function) and root part.

External context in the upper part includes the framework in which real activities take place. The root part of the external context contains environmental, social and historical factors. Anderson situates the external context in a larger context that consists of “enabling context” such as business and technology in the upper part, and “social-cultural context” in the root
part. “People” in Anderson’s diagram is similarly divided into the upper part and root part. He relates the upper part to skills and knowledge of use, calling people as “user”. Anderson explains that during the experience, user develops his skills and learned behaviours. In the root part, people are affected by natural behaviours and desires that in turn are influenced by different factors such as beliefs, expectations, prior knowledge, personality and emotions.

Anderson provides a brief version of the model and explains the main parts by simple questions (Fig.3). He finally comes to the conclusion that creating extraordinary experiences requires a profound understanding of the root part such as motivations, desires, emotions, social-cultural factors and beliefs.
2.1.3. Ux Model Of Cruising

Anderson’s diagram seems to be a well-founded tool for designers to determine the factors influencing the creation of an experience. Using Anderson’s diagram allows experience designers to locate parts of a case study in the model, and map the relation between elements of the case. For this, I synthesized the model with “cruising experience” to investigate and locate the influential factors on passengers’ experience (Fig.4).
The same as Anderson’s model, I divide the diagram into upper part (function) and root part (meaning) for it will remain as the baseline of the model. In cruising experience, “people” are called “passengers” and the major “activity” will be “cruising” that includes all the sub-activities such as onboard and outboard activities. Identical to Anderson’s model, internal context consists of relational and emotional state of the passenger that cannot be found clearly in the research process. The only known fact about the internal context is that passengers were convinced and adequately motivated to experience cruising. This may be useful for studying the passengers’ motivational factors in the next chapters.

I keep the title “user” for passengers in the upper part of the model since they are basically the users of products and services during the journey. Influential factors on passengers are rooted in behaviours, desires and preferences that are in turn affected by beliefs, expectations, personality, emotions and prior experiences. As can be seen, these factors remain the same as in Anderson’s model. In “Cruising” section of the model that represents “activities”, the upper part of the model contains all the sub-activities take place during cruising experience.

The root part of “cursing” includes motivational factors (will be discussed in the next chapters). As for external context, “cruise ship” as well as “products and services offered during the journey” both are placed in the upper part of the model. Identical to Anderson’s model, the root part of external context includes environmental, social and historical factors. Finally, since cruise lines and available technologies enable the experience to happen, I place the cruise ship companies and their facilities for the enabling business and technology. However, social-cultural context in the root part requires a different field of research.

2.1.4. Experience Design In Ux Model Of Cruising

UX emerges in the “use and/or anticipated use” of a product or service, that may occur before, during and after the interaction of user with the system (Roto et al., 2011). The same definition
applies to cruising experience. Given that, I map the role of UX designer of cruising experience in Anderson’s model (Fig.5). UX designer in this thesis refers to a person or a team working for cruise ship companies to create pleasurable and novel experiences for variety of customers.

The role of UX designer includes all the research and design activities take place before, during and after the experience. Despite the fact that research for UX covers a large context, some of the influential factors on experience remain unclear for researchers and designers. For example, internal context of user (passenger), which includes relational and emotional state of the user, cannot be found and described clearly for UX designer. Also, the relation between social/cultural aspects of external context with internal context is not completely tractable.
These limitations to UX design of cruise ships can be attributed to three reasons. Firstly, cruise ship passengers consist of a large variety of people with different origins, personalities and backgrounds. As a result, investigating internal context of passengers such as their relational and emotional state seems impossible. Secondly, in terms of external context, environmental and social/cultural factors are not entirely designable by UX designers. However, these factors are relatively more researchable than internal context, since external factors are more tangible and accessible for researchers and designers.

Clearly, the role and proactive value of UX design vary in different parts of the model. By “proactive value of UX design” I refer to the extent that UX designers can study and affect the influential factors on experience. As stated, the value of UX design varies in different design cases and situations. For example, UX designer can have a key role in creating motivations for “good dining” in a cruise ship. In contrast, designing motivational factors for passengers’ eco-behaviour seems more complicated. This complexity roots in the deeper influential factors on the experience such as behaviour. Yet, at this stage I give equal proactive value to the role of UX design in different parts of the model. In the next chapters (results and discussions) the value of UX design in regard with its influence on eco-behavior will be discussed.

2.1.5. Concept Generation For Cruising Experince Design

It is widely accepted that concept generation plays a vital role in the visionary developments and innovations of industries (Ulrich and Eppinger, 1995; Rusted and et. al, 2007; Keinonen and Takala, 2006). Particularly in the cruising industry, designing the visionary future of cruise ships is considered as an important challenge of cruise lines (Johansson, 2010, Frey, 2011). Cruise and passenger ships are sold on the basis of concepts and only after the sale actual building begins (Keinonen and Takala, 2006).

The design and construction of cruise ships is a 3 to 4 years process, consisting of broad research studies (Chanev, 2105). Similarly, experience design for cruising requires extensive researches, serving visionary developments of the industry. Given that, generative researches for experience design is of importance. Generative researches help experience designers to
elicit insights from potential/users and discover opportunities for innovations (Estes, 2015).

In generative research, potential/users collaborate with experience designers in the process of concept generation (Schulte, 2011), and consequently play a crucial role in visionary developments of products.

**2.1.6. Generative Research With And For Potential Passengers**

Generative research provides experience designers with opportunities to involve potential/users in innovation process. Involving potential/users in the fuzzy front end of a concept generation is of primary importance (Koen et al., 2002). Fuzzy front end is described as the early stage of concept design for product development (Cagan and Vogel, 2002). This stage includes a process to identify new opportunities for the development of products (Fig.6). The initial part of the model that focuses on identification of opportunities consists of uncertain insights collected through generative researches. As a result potential/users’ latent needs, desires and preferences will be identified. In addition, radically new ideas for the development of products can be found (Schweitzer, 2014).

As previously stated, cruise lines are competitively trying to expand their markets and attract more customers. Thus, they actively put effort into designing strategies in which potential
passengers become loyal passengers. Recent decade has witnessed a growth in the number of cruisers. This is because the industry has succeeded in attracting more ranges of customers, in terms of age, origin and income. For example, CLIA (2011) reports that passengers’ average age has dropped from above 50 in 2002 to 46 in 2011. Reportedly, cruising is becoming more popular among younger customers (Cruise market watch, 2015). As for the origin, Forbes (2014) estimates that China will become the second largest market for cruise lines by 2017. These examples suggest that visionary developments of the cruising industry entail broader researches on potential passengers.

In the present research, I focus mainly on potential passengers due to the importance of their perspective and insights for future developments. However, in my researches, cruisers (those with prior cruising experience) are not excluded from samples. This is because I intend to compare their insights (based on their prior experiences) with potential passengers’ desires and perspectives.
2.2. Impacts And Consumption: State Of Cruising

Cruise ships can be described as floating cities due to the number of habitants, services and consumption (EPA, 2013). The number of cruise ships built worldwide is growing. It is estimated that 20 new ships will be launched between 2015 and 2018 (Lauderdale, 2014). Simultaneously, concerns about sustainability are increasing as several reports indicate the environmental impacts of the cruising industry (e.g., Oceana 2004; Brida and Aguirre, 2008; Walnum, 2011; Ombellini 2013). Birkeland (2010) illustrates designing of the ships of the future and believes that in all the future scenarios energy efficiency and environmental impacts are the design priorities. Similarly, Levander (2010) argues that future scenarios of shipping include energy efficiency and emission reduction as the “key factor” of design. The environmental impacts of cruise ships consist of variety of sources. Copeland (2008) lists the main waste streams that cruise ships generate (Fig.7):

- **Grey water** that is the waste water from shower, sinks, laundry and cleanings. Grey water accounts for nearly 3.8 million litres during a 7-10 day cruising journey, making it the largest source of liquid waste from a cruise ship (also see: Dowling, 2006). Despite the regulations and technological progress in grey water management, the amount of grey water generated by cruise ships is growing widespread concerns.

- **Black water** or sewage consists of wastewater from toilets that highly impacts the sea life. It is estimated that a large cruise ship that contains 3000 passengers can produce up to 115000 litres of sewage per day (also see: The ocean conservancy, 2002).

- **Solid waste** includes non-hazardous and hazardous substances such as paper, plastic, glass and aluminium and chemical waste. National Research Council Committee on Shipboard Waste (1995) estimated that cruise ships are responsible for nearly one-fourth (by weight) of the total solid waste of the marine vessels globally.

- **Air emissions** from cruise ships are generated by the function of engines as well as consumption of energy on board. Emissions include CO (Carbone monoxide), Sox (Sulfur...
oxides), NOx (Nitrogen oxides) and CO2 (Carbon dioxide). One study (Walnum, 2011) compares the energy consumption and CO2 emission per passenger-kilometre for different modes of transport. The research shows that a cruise ship (Norwegian case study) can consume up to 5.6 times more energy and produce approximately 5.7 times more CO2 than a 737 Boeing (950km). A similar research (Howitt et al., 2010) studies carbon emissions from cruise ships to and from New Zealand and proves that cruise ships are evidently “more carbon intensive mode of international transport” compared to airplanes. In addition to above-mentioned waste streams, cruise ships generate other wastes such as Oily bilge water and ballast water.

![Cruise ship's major environmental impacts consist of air emissions and ship discharges](image)

Fig.7. Cruise ship's major environmental impacts consist of air emissions and ship discharges
2.2.1. Cabins And Consumption

Environmental impacts of cruising can be categorized into five types, using the life-cycle analysis (LCA) methodology: Infrastructure, operational, distribution, use and consumption, and disposal (Johnson, 2002). The present thesis focuses on the impacts generated from use and consumption during a cruising experience. Most studies have tended to focus on overall impact of passengers use and consumption during a cruising experience (See, e.g., Oceana, 2004; Evenset and Christensen, 2011; Howitt et al., 2010). However, the total impact of consumers’ use and consumption comprises different activities in different locations onboard.

One of the main locations in a ship that passengers consume water and energy is cabin. My personal communication with experts at STX Finland indicates that cabins’ consumption has a notable influence on overall impact of cruise ships. Mäkelä (2014) Interior design manager at STX Finland states that due to the number of passengers and cabins onboard, passengers’ eco-behaviour in cabins can have a significant effect on reducing the overall environmental impacts of ships. She argues that multiplying passengers’ behaviour by the number of cabins and then multiplying by two (double occupancy) simply proves how eco-behaviour onboard can result in remarkable energy efficiency. Similarly, Cabins R&D Manager at Cabin Factory STX Finland (2014) believes that despite the technological advances in building more energy-efficient cabins, passengers’ eco-behaviour in cabins can have a great role in reducing the water and energy consumption. Reviewing the number of cabins on the largest cruise ships (1000-3000 cabins) proves that even minor improvements can result in significant consumption reduction. Thus, I chose cruise cabins as the particular location for studying eco-behavior of passengers.
2.3. Cruising Towards Sustainability

Due to the significant environmental impacts of cruise ships described above, the industry is governed by regulations and standards to reduce the environmental footprint of cruising. For example, IMO (International Maritime Organization) obliges cruise lines to follow particular standards in order to minimize their environmental impacts. Since 2011, The Energy Efficiency Design Index (EEDI) became obligatory for new-built ships to reach the minimum level of energy efficiency. Similarly, CLIA (Cruise Lines International Association) set a waste management policy in 2006 (come into force as of 2014), which requires CLIA members’ commitment to its standards in order to minimize the waste (CLIA, 2006).

In recent years, major cruise lines are also endeavouring to set environmentally friendly initiatives and publically reporting the works regarding sustainability in the media. Currently, all the largest cruise companies put sustainability as one of their main objectives and conduct practical solutions to make a more green company. Royal Caribbean shows the company’s concerns about the environment and introduces the latest environmental-friendly projects, strategies and achievements in terms of wastewater purification, energy consumption and emissions. (see: www.royalcaribbean.com/ourCompany/environmnet/envinitiatives.do)

Carnival cruise line, published the company’s “2020 sustainability goals” that aims for reducing carbon footprints of the ships by 25% compared to the company’s baseline in 2005. Carnival also sets its 2020 goals to reduce the waste generation and improve water efficiency, both by 5% relative to its 2010 baseline (Fig.8. see 2020 sustainability goals: http://phx.corporate-ir.net/phoenix.zhtml?c=140690&p=irol-sustainability).
**CARBON FOOTPRINT**
Reduce the intensity of CO2e (equivalent carbon dioxide) emissions from our operations by 25% by 2020 relative to our 2005 baseline, measured in grams of CO2e per ALB-km.

**AWWPS TECHNOLOGY**
Increase Advanced Waste Water Purification System (AWWPS) coverage of our fleet wide capacity by 10 percentage points by 2020 relative to our 2014 baseline.

**WASTE REDUCTION**
Continue to reduce waste generated by our shipboard operations by 5% by 2020 relative to our 2010 baseline, as measured by kilograms of non-recycled waste per person per day.

**DIVERSITY & ETHICS**
Continue to build a diverse and inclusive workforce and provide all employees with a positive work environment and opportunities to build a rewarding career to further drive employee engagement.

**BUSINESS PARTNER CODE OF CONDUCT AND ETHICS**
Further develop and implement vendor assurance procedures ensuring compliance with Carnival Corporation & plc’s Business Partner Code of Conduct and Ethics.

**EXHAUST GAS CLEANING TECHNOLOGY**
Continue to improve the quality of our emissions into the air by developing, deploying and operating Exhaust Gas Cleaning systems across the fleet capable of reducing sulfur compounds and particulate matter from our ship’s engine exhaust.

**COLD IRONING CAPACITY**
Increase Cold Ironing coverage of our fleet wide capacity in relation to future port capabilities.

**WATER EFFICIENCY**
Continue to improve water use efficiency of our shipboard operations by 5% by 2020 relative to our 2010 baseline, as measured by liters per person per day.

**GUEST AND CREWMEMBER HEALTH, SAFETY & SECURITY**
Striving to be free of injuries, we continue to build on our commitment to protect the health, safety and security of our guests, employees and all others working on our behalf.

**OUR COMMUNITY**
Continue to work on initiatives and partnerships that support and sponsor a broad range of organizations for the benefit of our local and global communities throughout our Brands, in particular Fathom.
Paloti et al. (2014) provide a list of the latest environmental initiatives of major cruise lines and categorize them into four practices: Onboard Policies, Conscious crew, Special Project, and Green Passengers. Table.1 summarizes some of the main environmental initiatives conducted by nine major cruise lines.

Paloti et al.’s categorization of environmental initiative practices in cruising industry seems to be useful for my research. However, authors did not provide any explanation for the categorization. The main weakness in their categorization is that titles may overlap each other. For instance, readers can put “green passengers” strategies in “onboard policies” category, since examples from cruise lines are mainly happening onboard. Also, the term “onboard policies” seems to be a broad and vague title since it only points out the context of the practice (onboard). Moreover, the categorization overlooked “green marketing” strategies for potential cruisers initiated by major cruise lines.

My observation of cruise lines’ strategies gathered by Paloti et al. resulted in a different view to the categorization of environmental practices. Reviewing examples of environmental practices conducted by cruise lines indicates different similarities among strategies. For example, majority of “onboard policies” and “conscious crew” can be categorized as “resources and waste management”. That also includes all the technological improvements and installations onboard as well as training the crew for sustainability. Also, I found similarities between some of the “green passengers” and “projects” strategies, which can be named as “cooperative strategies”. To explain, “cooperative strategies” refers to the initiatives in which the cruise line cooperates with different sectors or communities for sustainability purposes. The rest of the environmental strategies focuses on involving passengers in the practice that I named as “passenger-focused strategies”. Given that, I reviewed the environmental practices of the 9 cruise lines studied by Paloti et al. and noticed that while cruise lines have put comparatively remarkable effort on resources and waste management, passenger-focused strategies still need more work.
<table>
<thead>
<tr>
<th>Cruise Lines</th>
<th>Onboard Policies</th>
<th>Conscious Crews</th>
<th>Projects</th>
<th>Green Passengers</th>
</tr>
</thead>
</table>
| Crystal Cruises      | - Advanced technologies to reduce the consumption such as low-flow showers and energy efficient lightings in cabins  
                      |                                                                              | - Compulsory and optional trainings for crews on sustainability | - Conducting lectures by environmental experts  
                      |                                                                              |                                                                              | - Recycling unused toiletries for impoverished nations | - "You care, we care" participatory project in which passengers can participate in conservation workshops in destinations |
| Holland America      | - Wastewater purifying onboard  
                      |                                                                              | - Training programs for officers about sustainability | - Cooperating with governmental sectors to test the most recent emission-reduction technologies | - Providing presentations onboard about sustainability |
| Norwegian Cruise Line | - Disposal and reuse of waste materials  
                      |                                                                              | - Trainings for crews on sustainability | - Experimenting latest technologies to reduce Sulfur emission  
                      |                                                                              |                                                                              | - Encouraging passengers to recycle  
                      |                                                                              |                                                                              | - Kid's crews teaches junior passengers about environment  
<pre><code>                  |                                                                              |                                                                              | - Cooperating with NextEra project, giving passengers the opportunity to track their carbon footprints |
</code></pre>
<table>
<thead>
<tr>
<th>Cruise Line</th>
<th>Policy/Initiatives</th>
<th>Trainings/Experiments</th>
<th>Other Activities/Operations</th>
</tr>
</thead>
</table>
| **Royal Caribbean** | - “save the wave” policy that includes technological advances for wastewater management  
- “zero-discharge” policy on board for solid waste | - trainings for crews on sustainability  
- “explorer of the seas” as a lab for scientists and researchers  
- installing the latest generators to reduce the electricity consumption | - providing hands-on experiments for junior passengers about sustainability |
| **Princess Cruises** | - “zero solid waste discharge” policy  
- replacing plastic packaging with biodegradable materials  
- waste water treatment system  
- using bioreactors for water treatment onboard  
- waste sorting onboard | - compulsory trainings for crews on sustainability  
- “plug in” project at some ports | - facilitating passengers to recycle by marked containers onboard |
| **Carnival Cruise Line** | - recycling and waste management policy for disposal to land  
- engineering process for oily bilge water  
- donating furniture and small appliance to charities  
- 2 ships use shore power technology in port | - trainings for crews on sustainability  
- “plug in” project at some ports  
- installing devices for scientific research in collaboration with research centers | - facilitating passengers to recycle by marked containers onboard |
| **Disney Cruise Line** | - approx. half of the whole solid waste generated onboard (per year) processed for recycling and reuse  
- recycling 12000 pounds of cooking oil per week of which 60% used to generate biodiesel fuel  
- smart technologies such as self-adjusting temperature system and lighting  
- using the heat generated by engines to turn sea water into drinking water | - environmental officers observe the process of waste management during the journey  
- trainings for crews on sustainability | - hosting experts on specific routes to educate passengers and crew during the journey  
- being the first cruise company using nontoxic hull coating that results in fuel efficiency  
- encouraging passengers and crew to participate in Wildlife protection funding projects |
| **Costa Cruises** | - reduce, recycle and reuse policy for solid waste  
- composting the food waste | - environmental officers observe the process of operating the ship in terms of being eco-friendly  
- trainings for crew on sustainability | - being awarded for initiating energy efficiency programs and projects  
- providing eco information in cabins |
| **MS Cruises** | - garbage grinders and incinerators onboard  
- aluminum waste from cans recycled into sheets at ports  
- plastic reduction policy | - onboard and shore-based environmental officers to observe the environmental operations | - supporting research projects for controlling the environmental footprint of ships  
- using the on/off electricity card as cruise reward if taking out when not in cabins |
2.3.1. Passengers As Potentials

As previously reported, cruising industry carried nearly 22 million passengers worldwide in 2014. Cruise Market Watch (2015) estimates 6.55% annual growth rate of passengers for the industry from 1990 to 2019. It is predicted that over 36 million passengers will travel by cruise ships in 2025, representing approximately 74% growth (Ocean shipping consultants, 2013). Significant number of cruise passengers draws our attention to the question whether cruise lines can see the customers as potentials for creating a greener industry. As seen before, some cruise lines are circumspectly trying to involve passengers in their environmental stewardship. Klein (2011) stresses that passengers’ demand for environmentally-friendly cruising is raising. Pitkänen (2014) Director Newbuilding at Royal Caribbean Cruises reports that cruise lines have seen increasing sensitivity from European passengers whether the ship’s strategy and actions are in line with environmental concerns. Yet, due to the nature of the cruising experience, passengers’ participation in sustainability initiatives of the industry seems to be controversial. In this thesis, first, I study desires and preferences of potential cruisers that may affect their anticipated experience, and finally discover practical approaches for encouraging passengers to participate actively in environmental stewardship.

Undoubtedly, cruisers’ eco-behaviour can result in noticeable reduction of the overall consumption in cruising sector. However, engaging passengers in the environmental stewardship entails more comprehensive studies. In the previous part I categorized the environmental initiatives of cruising industry into 3 practices:

- Resources and waste management
- Cooperative strategies
- Passenger-focused strategies

As previously shown, the industry is cautiously moving towards passenger-focused strategies for environmental initiatives. I argue that engaging passengers in environmental stewardship
of cruise lines results in accelerating sustainability improvements. Nevertheless, engaging passengers in environmental initiatives raises concerns about its effects on passengers’ satisfactory experience.

My personal communication with experts in cruise lines indicates that despite the need for passengers’ participation in creating a more sustainable industry, there are still doubts regarding passengers’ willingness to participate (meeting on thesis topic with Juhani Pitkänen from Royal Caribbean, Merja Mäkelä from STX Finland, Mervi Pitkänen from Koneteknologiakeskus Turku Oy). Fig.9 explains the desired shift in relation between sustainability improvements and passengers’ experience, in which sustainability does not only contract the experience of passengers, on the contrary increases the satisfaction of cruising experience.

Fig.9. Desired relation between passengers experience and sustainability improvements
2.3.2. Passengers And Eco-Behavior

As discussed above, involving passengers in the environmental stewardship of the cruise line is deemed to be controversial. However, to the best of my knowledge, no study proves the negative effect of promoting eco-behaviour on passengers’ experience. Thus, there is still need for more research on the topic.

Receiving feedback on my thesis topic from experts in the cruising industry, I realized that their main concern is about the “relaxing” nature of cruising experience, which may be in contrast with enhancing eco-behaviour. They reasoned that promoting eco-behaviour might affect customers’ motivation for cruising since the majority of passengers choose cruise ship for its “sense of freedom”, “pampering” and “relaxing” nature. That in turn negatively affects customers’ willingness to purchase. Some studies in the early 90’s show insignificant interrelationship between customers’ eco-concerns and purchasing behaviour (SMRB, 1991; Kleiner, 1991; Schlossberg, 1991; Winski, 1991). However, my review of the recent research literature suggests a considerable increase of consumers’ positive attitude towards eco-products/services, and willingness to purchase (For example: Boztepe, 2012).

As the experts referred to the term “motivation”, I reviewed previous researches in regard with passengers’ motivations to cruise. Despite the importance of the topic, few studies have been carried out in the field. Hung and Petrick (2011) found major motivations for cruising as relaxation/escape, socialization/bonding and convenience of the journey. Another study by Li and Petrik (2008) emphasizes the role of previous cruising experiences on motivation and underlines the importance of service quality and price.

Duman and Mattila (2005) suggest a more holistic term for cruising motivation as perceived values. A research by CLIA (2006) provides a list of motivational factors on intention to cruise, which includes destination, price and opportunity for relaxation. This study also highlights the role of “source of information” in motivating customers to take a cruise. Finally, Jones (2011) investigates underlying motivational factors reinforcing the desire for cruising. He emphasizes the importance information in encouraging people for taking a cruise. The study also indicates
a high influence of comfort and accommodation on cruisers’ motivation. In addition, the research stresses that the “need for stimulus-avoidance” is of high importance for customers.

Reviewing above-mentioned studies indicates that relaxation, comfort and sense of freedom play crucial roles in customers’ motivation to take a cruise. Although, no evidence has been provided to show the negative influence of promoting eco-behaviour on cruisers’ motivation. This may suggest the need for strategically designed ways to encourage eco-behaviour of cruisers.

2.3.3. Facilitating Eco-Behavior

Diversity of customers is one of the challenging aspects of promoting eco-behaviour. However, understanding values and desires of customers will help the industries to facilitate consumers’ environmentally friendly behaviour. Belz (2008) segments consumers into three types, in terms of socio-ecological consciousness and willingness to act upon it. The first segment called “socio-ecological active” is highly conscious of socio-ecological issues and willing to act for them. The second group, “socio-ecological approachable” has relatively high consciousness and can be activated for pro-environmental actions. The third segment includes “socio-ecological passive” consumers whose consciousness level is significantly lower than the other two groups. For the third type of consumer, sustainability is not playing a role in purchasing and use behaviour.

For an industry to promote eco-behaviour, encouraging customers from being “socio-ecological passive” to “approachable” and finally to “socio-ecological active” is of crucial importance. Referring to Triandis (1977) theory of interpersonal behaviour, I would like to emphasize the role of “facilitating conditions” in consumers’ transition from “socio-ecological passive” to “socio-ecological active” (Fig.10).

The same segmentation of consumers applies to cruise passengers, thus cruisers also vary in terms of socio-ecological behaviours. The present thesis attempts to design and suggest facilitating conditions for encouraging passive passengers to move towards being active in terms of eco-behaviour.
2.3.4. Facilitating By Design + Communication

Facilitating conditions can have significant effect on consumer’s behaviour. Triandis (1977) describes “facilitating conditions” as factors that ease a certain behaviour or task to happen. As a result, consumers show more positive attitude towards desired behaviours and actions (Limayem et al., 2004). Similarly in studies of environmental-friendly behaviour, some researchers emphasize the importance of facilitating conditions, arguing how facilitation can have positive influence on consumers’ motivation and eco-behaviour (Stern et al., 1999; Van Raaij, 2002; Thøgersen, 2005). This highlights the need for “designing” the facilitating conditions to enhance certain behaviours such as environmentally friendly behaviour. Similarly, in the field of cruise ship design, facilitating conditions must be thoroughly designed since they may influence on the quality of UX.

As previously stated, the main aim of this study is to facilitate consumers’ behaviour from socio-ecological passive to socio-ecological active. However, due to the potential threats of promoting eco-behaviour in cruising experience, the facilitation process needs to be designed and well-communicated with customers. Promoting eco-behaviour entails effective communications with costumers. An effective communication can familiarize customers with the company’s solutions for sustainability developments, and how they will be in line with customers’ needs and values (Belz and Peattie, 2012).
2.3.5. Design + Communication Strategy

Defra (2011) provides a framework for facilitating eco-behavior, called 4Es, which is basically a tool to ensure the mix of interventions for behavioural change (Fig.11). Authors argue that behavioural change towards sustainable behaviour should be a mix of four interventions:

(1) **Enable:** Easing eco-behaviour, which attributes Systems and Capacity. This includes removing constraints, facilitating the behaviour, educating and providing skills.

(2) **Encourage:** Providing people with the right signal. This may include incentives, instructions, feedback and also disincentives.

(3) **Engage:** Involving people. This underlines the importance of early involvement of the target group in order to achieve a better understanding of their role.

(4) **Exemplify:** Demonstrating the shared responsibility. This includes demonstrating the act of others for the same behavior and providing examples to clarify the importance.

This model seems to be useful tool in order to design facilitation strategies supporting eco-behavior of passengers through experience design.
Easing eco-behavior attributes Systems and Capacity
Includes removing constraints, facilitating the behavior, educating and providing skills

enable

Providing people with the right signal
May include incentives, instructions, feedback and also disincentives

encourage

Involving people
Underlines the importance of early involvement of the target group in order to achieve a better understanding of their role

engage

exemplify

Demonstrating the shared responsibility
Includes demonstrating the act of others for the same behavior and providing examples to clarify the importance
Belz and Peattie (2012) demonstrate that companies’ communication for sustainability solutions must be “carefully planned, managed and controlled”. They argue that marketing communication for sustainability may be conveyed through three messages:

<table>
<thead>
<tr>
<th>(1) Rational appeal</th>
<th>(2) Emotional appeals</th>
<th>(3) Moral appeals</th>
</tr>
</thead>
<tbody>
<tr>
<td>aiming to customers’ personal desires or benefits</td>
<td>emphasizing sense of empathy of customers</td>
<td>aiming to moral values of customers</td>
</tr>
</tbody>
</table>

Despite the importance of all the three mentioned appeals, I argue that communication strategies for facilitating eco-behaviour of cruise passengers, must mainly focus on rational appeals. This is because of the nature of cruising, since emotional and moral appeals may negatively influence the expected pleasure of cruising experience. Nevertheless, I believe that moral appeals could also be used to some extent, yet the context of use (regionally, socially and culturally) must be taken into consideration.

According to a study conducted by Rose et al (2007) in cases where emotional and moral strategies do not seem to be effective, the following strategies are suggested:

1. **Emphasizing the advantages of eco-behaviour such as economical benefits of the action**

2. **Emphasizing the positive self-image of eco-behaviour**

3. **Make the positive consequences of their actions tangible (in accord with the context, time and place)**

4. **Avoiding negative emotional communication**

5. **Focusing on interaction with customers: playful, entertaining and informative**
In another study, Storas (2011) suggests a number of characteristics for effective sustainability communication with customers. The study states that an effective message for sustainability communication must be:

*Clear and Transparent*

*Brief and Simple*

*Real and Credible*

*Humble and Committed*

*Informative and Solution-oriented*

The same study also underlines the importance of sustainability communication with customers (and potential customers) from the point of (pre) purchase. This may suggest that cruise lines start efficient sustainability communication with passengers before the journey.
3. STUDY METHOD

3.1. CONSTRUCTIVE DESIGN RESEARCH METHOD

3.1.1 STUDY PARTICIPANTS

3.1.2 OVERVIEW OF THE TWO RESEARCHES

3.2. BIGPIC

3.2.1 PURPOSE

3.2.2 SAMPLING STRATEGY

3.2.3 DESIGN RESEARCH APPROACH

3.2.4 CONSTRUCTIONS AND TOOLS

3.2.5 PROCESS

3.3. ECOCABIN

3.3.1 PURPOSE AND BACKGROUND

3.3.2 SAMPLING STRATEGY

3.3.3 DESIGN RESEARCH APPROACH

3.3.4 CONSTRUCTION (SCENARIOS) AND TOOLS

3.3.5 PROCESS
3. STUDY METHOD

3.1. Constructive Design Research Method

For the past 20 years, the role of research in design and product/service development has significantly changed. The change was rooted in a variety of historical, economical, political and social incidents (Ireland, 2003). Consequently, research methods have also seen a shift towards more “designed” and “generative” ones in which Design and Research are integrated. In other words, “Design practice is placed at the core of the research” (Koskinen et al., 2011).

In the field of Design research, Koskinen et al.’s (2011) book “Design Research Through Practice: From the Lab, Field and Showroom” provides a comprehensive description of methods for integrating design and research. The authors explain these methods as “Constructive Design Research” in which a designed construction such as a product, prototype, physical model, media, scenario or detailed concept is used for research purposes. They differentiate constructive design research and scientific/traditional research methods, arguing that the former results in discovering unseen and unknown aspects of a topic. As the writers explain, the construction gives the opportunity to the respondent to imagine, play and/or make a desired design/scenario/concept. Therefore, the respondent delivers his/her creativity to the researcher. The design researcher, in turn, facilitates the process, observe the procedure and eventually analyses the outcomes. Expectedly, respondents’ proactive participation has a critical role in constructive design research. Thus, I argue constructive design research takes place merely through interaction between researcher, designed construction and the participant.

Inspired by constructive design research methodology, I conducted two design research studies: (1) BigPic, and (2) EcoCabin, both trying to engage customers/potential customers in the fuzzy front end of the concept design.

In the first study called BigPic I used three types of constructions to conduct the research: (1) A video (2) A photo album, and (3) A physical model of a cruise ship. In the second study, a number of design concept visualizations were used as constructions to facilitate the research.
3.1.1. Overview Of The Two Researches

As previously indicated, the thesis consists of two design research studies called: BigPic and EcoCabin. The BigPic study was conducted before the second research. Both studies were part of FIMECC Innovation and Networks program at Nodus Sustainable Design Research Group, Aalto University. I continued both researches in Triad project, Cruise and Ferry Experience program, Aalto University. In the first study, I sought to elicit respondents’ perspective on the following questions:

- What do potential passengers generally think about cruising experience?

- What if we offer iconic sustainability activities and experiences onboard?

- What do they value in terms of cruise cabins?

The research is the initial stage of the fuzzy-front end concept design to discover the “Big Picture” of cruising experience for potential passengers. For this reason, it starts with a more general perspective regarding passengers’ perception of cruising experience. As the main purpose of the thesis is to simultaneously improve UX and Eco-Behavior, I tried to find out how adding iconic sustainability activities (such as DIY activities and skill learning, Eco-friendly activities and Eco-shopping) may influence their perceived experience. I took this step cautiously, not emphasizing the purpose of the activities (will be explained in the next part). Finally, I tried to discover potential passengers’ values in choosing or designing a cabin. As the name of the research conveys, the main purpose of this study is to gain a general/overall picture of:

- How cruising experience is perceived by potential passengers

- How sustainability activities onboard are perceived by them

- How cabin design or location may affect the overall experience
The second study, Eco-Cabin, comprises two parts both focusing on Eco-Behavior. In the first part, I asked the participants to share their values and attitudes about their Eco-Behavior. The second part of the study consists of some design concepts (as scenarios) to improve Passengers’ Eco-behaviour in cabins. Participants then compare the concepts and express their opinions about the scenarios.

Despite the fact that the main focus of the thesis is “cruise cabin”, I argue a broader context must be studied. In fact, the topic contains variety of factors influencing the each other. On one hand, we have “experience” in the context of cruising, on the other hand “Eco-behaviour” of passengers in the same context. Admittedly, there are other influential factors in between which are unseen. Therefore, in the first study I tried to zoom out and look at the topic in a larger scale that includes cruise ship as the containing context, general experience of cursing, and cabin as the other context of the experience. Then after, I zoomed in to a more detailed scale, and focused on the cabin and Eco-behaviour inside the cabin. This approach significantly helped me in the design section of the thesis to have an overall understanding of the topic and design a strategy for encouraging Eco-behaviour of passengers.

3.1.2 Study Participants

As stated in the previous section, generative researches on potential passengers is highly important for visionary developments of the industry. This is because cruise lines try to attract more passengers. Given that, due to the importance of potential passengers’ insights for future developments, my researches mainly focus on these participants. However, cruisers (those with prior cruising experience) are not excluded from samples. This is because I intend to compare their insights (based on their prior experiences) with potential passengers’ desires and perspective.

The question then arises as to how non-cruisers can participate in UX research since they have no prior experience of cruising?. Roto et al. (2011) provide a clarification to the concept of user experience in “user experience white paper”. They demonstrate that studies on UX are not limited to the “use” phase of the experience, thus cover a larger time span including “before”
and “after” usage. The paper explains that the “before use” phase of the experience consists of potential user’s expectations from future use of the product. Similarly, the “after use” phase of the experience includes reflection on previous interactions with the product.

Both researches conducted in the thesis, focus on the term “Anticipated UX” which comprises imagining experience. This is because the researches are based on concepts, rather than actual products. As noted before, in order to understand experience design more thoroughly, participants with prior cruising experience were not excluded from my studies.

As for the sampling strategy, due to the exploratory of the research I used “convenience approach”. Convenience sampling relies on accessibility and availability of samples as well as their willingness to participate (Miles and Huberman, 1994). This method was used mainly because of the exploratory approach of the research.
3.2. BigPic

3.2.1. Purpose

The first study is a qualitative design research to explore customers/potential customers’ insights into cruising experience. It provides a facilitated context in which participants can share their insights and ideas. By the end of the session, participant’s opinions, desires and preferences regarding cruising experience can be collected. This research tries to answer the following questions:

- What does cursing experience mean to them?
- How do they perceive cruising experience as potential passengers?
- What do they prefer to experience and not to experience?
- Would they like to experience iconic sustainability related activities onboard?
- What do they value about cabins in terms of design and location?

3.2.2. Sampling Strategy

I set up a Design Research Laboratory in which 30 subjects were individually surveyed. The participants’ age ranged from 17 to 48 and 45 of them have never experienced a cruise ship, considered as potential cruisers. However, the majority of participants had experience of being on a ferry type of a vessel. As for the sampling strategy, due to the exploratory of the research convenience approach was used. Therefore, nationality, marital status and educational background were not the main criteria in choosing the samples. All of the participants were informed that the session would be video recorded and photographed.
3.2.3. Design Research Approach

I chose the lab approach for our survey due to two reasons. Lab study is accepted as a controlled platform, yet flexible in design research (Koskinen, et al., 2011; Binder and Brandt, 2008). Therefore, both researchers and participants can concentrate directly on the main approach provides the study with the possibility of using tools and instruments (Brodersen, Dindler and Iversen, 2008). In addition, participants’ insights may be used for directly or indirectly for concept design.

3.2.4. Constructions And Tools

As a constructive design research, three constructions were used for this study:

▶ A video that was combination footages from passengers available online (Fig.12). Those footages could show the cursing experience from passengers’ point of view. The video was edited and combined by myself and was shown on a large screen during the study. Therefore, the participant could comment on that time to time or get inspired about cruising experience by the footages.

Fig.12. Video footages of cruising experiences was shown during the research session
A photo album including 100 pictures (Fig.13). Pictures were collected purposefully from Internet in five categories respectively:

1. General shape and appearance of cruise ships (such as Allure of the seas, Oasis of the seas and Disney Dream)

2. Interior design and layout of cruise ships. This included different locations of a cruise such as restaurants, hallways, cabins, decks etc.)

3. Onboard activities and services. This part was taken from major cruise lines’ websites as they call it: Things to do and services.

4. Iconic sustainability activities. This section consisted of some pictures of DIY activities, gardening and local bazar.

5. Cabin interior designs and facilities.

As explained in the previous section, the idea of this approach was to help the participant to first have an overview of the experience (zoom out) and gradually direct them to cabin design (zoom in). In between, I wanted to examine participants’ reaction to adding iconic sustainability activities onboard, which to the best of my knowledge has not been studied thoroughly before.

Fig.13. A photo album was used to facilitate the research process
A Physical model of a cruise ship (Fig.14) The model was made out of wood cut by CNC machine (L: 800mm, W: 250cm, H: 350mm). The model consisted of 15 movable decks, helping the participant to imagine the overall space and layout of a cruise ship.

In addition to above mentioned constructions, the participants were provided with a paper questionnaire as well as materials to mark, draw, make quick models, and take notes. The study was conducted in a 70 square meter room, fruitful for some questions in the study.

3.2.5. Process

BigPic study consisted of the 5 stages. In the first stage of the research, the purpose of the study as well as the process was briefly introduced to the participant. In addition, key elements in the study such as cruise ship and cruising experience, were described to the participant. I also had to explain the difference between cruise and ferry, pointing out the duration, services,
routs, purpose of journey, and size of the ship. To facilitate this stage, a video was playing on the large screen, showing cruise ships, onboard facilities and services, and cabins. At the same time, the participant could share his/her opinion verbally or write down some points in the notebook provided by the researcher.

The second part of the study included a paper questionnaire in which participants were asked to write their personal information as well as describing prior experiences with cruise ships. They were also asked to describe their perception of cruising experience (I also asked the same question at the end of the study. In the “results” part we will see whether the BigPic study had an effect on their perceived experience or not).

In the third section, the photo album was given to the participant and he/she was asked to express his/her feeling, perception or opinion about the picture. The respondent could share his/her perspective verbally or written in the notebook. As explained previously, the idea was to familiarize participants with cruising experience from a general perspective to a more particular viewpoint, and facilitate their imaginations.

The fourth stage consisted of questions about participants’ preferences regarding Cabins. They were firstly asked how their Dream Cabin looks like, in terms of size, design, facilities and features. To facilitate their imagination, they could walk around and mark the floor, showing the desired size of the cabin. Also, they were provided with color and material catalogues for interior design purposes. In addition, a photo album of different cabin types, interior design of homes, and hotel rooms were available to ease the imagination of the respondents. Then they were asked to mark the most preferred location of their cabin on the physical model. They were able to move the decks of the model to get a better understanding of the layout and the overall arrangements of a ship.

The last part of the study comprised a conclusion of the session from the participants’ point of view. They were asked again to express their feelings, perceptions and opinions about cursing experience. In addition, I asked them whether the workshop had any influence on their perception, or if their opinions about cursing has changed (Fig.15: 1-9)
Fig. 15.
Stages of BigPic research session

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
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<tr>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>
3.3. EcoCabin

3.3.1. Purpose And Background

This study seeks to address how passengers can be involved in the reduction of energy and water consumption. For this reason, I proposed a model in which potential passengers respectively compare four design concepts. The concepts were based on Tang and Bhamra’s (2008) study that provides a list of seven design intervention strategies generated or used for changing energy consumption behaviour. They limit the strategies to product-oriented ones as well as conceptual products. Here design intervention strategies and product-oriented approaches for changing energy consumption behaviour are reported:

<table>
<thead>
<tr>
<th>Eco-information - design oriented education</th>
</tr>
</thead>
<tbody>
<tr>
<td>to make energy (consumables) visible, understandable and accessible to inspire consumers’ reflection upon the energy use of electrical devices</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eco-choice - design oriented empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>to encourage consumers to think about their use behaviour and to take responsibility of theirs actions through providing consumers with options</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eco-feedback - design oriented links to environmentally responsible actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>to inform users clearly what they are doing and to facilitate consumers to make environmentally friendly decision through offering real-time feedbacks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eco-spur – design oriented rewarding incentive and penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>to inspire users to explore more sustainable usage through providing rewordings to “prompt” energy-conscious ehaviour or penalties to “punish” consumers unsustainable usage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eco-steer – design oriented affordances and constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>to facilitate user to adopt energy efficient use habit through the prescriptions and/or constraints of use embedded in the product design.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eco-technical intervention – design oriented technical intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>to restrain existing energy (consumables) use habits and to persuade or control user behaviour automatically by design combined with advanced technology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clever design</th>
</tr>
</thead>
<tbody>
<tr>
<td>to automatically act pro-environmentally without raising awareness or changing user behaviour through purely product design</td>
</tr>
</tbody>
</table>
Admittedly, the last three strategies entail less or no user engagement and more desirable for cruise passengers. Nevertheless, the present thesis discusses the strategies in which passengers are involved in the process. Thus, to serve the purposes of my thesis I limited the research on examining the concepts that require users’ participation. The initial idea of the study was generated in Innovation and Network project in 2012, and then I developed the concepts and designed a research case out of them.

### 3.3.2. Sampling Strategy

The study consisted of a survey in which 42 subjects individually participated in the research. The participants’ age ranged from 19 to 46, with no specific selection in terms of nationality, marital status and gender. The same as BigPic study, this research is also an exploratory and generative one, thus convenience sampling approach was used.

### 3.3.3. Design Research Approach

As a qualitative research, I used illustration and scenarios to conduct the study. Thus, the approach can be categorized as a combination of Design Lab (Koskinen et al., 2011) and Dialog (Hassenzahl, 2010).

### 3.3.4. Construction (Scenarios) And Tools

The survey included two materials: (1) Illustrations of design concepts in different sheets with explanations (see Appendix), and (2) questionnaire. I also created an electronic format of the survey for those who could not participate the study in person. I, as the researcher, was present during the whole study session. Referring the Hassenzahl (2010) dialog method, I designed a conversation based on the questionnaire made for the study. A voice recorder was used to document the session. By this, the participant could orally answer the questions without filling the questionnaire. Interestingly, the majority of respondents mentioned that they liked the method, since they were initially thinking that they must write the answers in the questionnaire. They expressed their satisfaction and describe the method with words such as “smooth”, “friendly”, “not boring” and “peaceful”.

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The research comprises the comparison of four design concepts as follows (Fig.16):

- **Informative cabin versus Non-Informative cabin**

  Informative cabin consists of not only eco-design considerations but also providing information to cruisers. Informative displays show the amount of water and energy consumed in the cabin by cruisers. The initial concept of Informative comprises the engagement of cruisers in reducing the energy and water consumption.

  - Non-Informative cabin includes eco-design considerations such as smart facilities, eco-friendly materials and efficient insulation resulting in the reduction of energy and water consumption. In other words, non-informative cabin does not necessarily entail participation from cruisers since eco-solutions are embedded in the design of the cabins.

- **Informative cabin with ship instructive feedback versus Informative cabin with no instructive feedback**

  Instructive feedback from the ship provides the passengers with eco-guidelines and practical ways of reducing the energy and water consumption in cabins.

  As a result, cruisers will be more aware of the energy consumption.

- **Informative cabin with ship instructive feedback versus Informative cabin with rewards**

  In the reward concept, cruisers will be informed about their daily energy and water consumption while the consumption level can be compared to a Target Level as well as the cruise average level. As a result, cruiser will receive a reward if his consumption level is below the average and target level.

- **Informative cabin with rewards versus Informative cabin with penalty**

  Contrary to the reward concept, penalty concept provides negative consequences for over consumption. Same as the reward concept, cruisers will be informed about their daily energy
Fig. 16. Stages of Eco-Cabin research
and water consumption while the consumption level can be compared to a Target Level as well as the cruise average level. Consequently, cruiser will receive a penalty if his consumption level is above the average and target level.

### 3.3.5. Process

The procedure of the survey consisted of 5 main stages. Firstly, the participant became familiar with the study by explaining the aim of the survey. I described the purpose of the study as well as the design concepts to prepare the participant for the questions. In the second stage, they were asked about personal information such as age, nationality, gender, education and prior cruising experience.

The third part consisted of three questions in regard with their concerns and actions for energy consumption. The first question in this stage sought to discover how concerned they were about energy and water consumption in daily life. The second question focuses on respondents’ actions in daily life to reduce the energy and water consumption. They were asked whether they practically try to reduce the energy and water consumption in daily life. The last question in this part, aims to compare participants’ eco-behaviour in daily life and while staying in a hotel or taking a cruise ship. They were asked whether their concerns and behaviour for reducing the energy and water consumption change in a hotel room or on a cruise ship. All the three mentioned questions had to be justified by explaining the reasons for their answer. In the fourth stage, I asked the participants to compare two design concepts and reply to the following questions:

- *which concept would you like more to experience on a cruise*

- *which cabin type reduces the energy and water consumption more effectively*

In other words, the first question aimed at examining the desirability of the concept for the participant, and the second question focused on how the concept can influence the general public consumption behaviour. In addition, we asked the participants to explain the reasons underlying their choices.
Finally, I asked the participants to compare all the concepts with one another and arrange them respectively according to their own desires (most desirable and least desirable). Following that, I asked them to compare all the concepts in terms of resulting in the most and the least reduction of energy and water consumption.

I believe this method has the capacity to examine varieties of design concepts by potential/customers, since it covers not only personal and emotional desires, but also logical criteria towards enhancing eco-behaviour.

At the end of the survey, I conducted a dialogue study with the participants, asking them how they think about the research and what points they would like to share with me. This part was based on Hassezahl’s (2010) “dialogue method” in UX design research. He argues that direct questions do not result in comprehensive outcomes, thus only through a conversation with samples, we can find hidden views of the respondents.
RESULTS
4. RESULTS

4.1. BIGPIC RESULTS

4.1.1. DEMOGRAPHY OF THE RESEARCH

4.1.2. RESULTS OF THE FIRST STAGE: GENERAL PERCEPTION

4.1.3. RESULTS OF THE SECOND STAGE: PHOTO ALBUM AND IDEATION

4.1.4. RESULTS OF THE THIRD STAGE: CABIN DESIGN AND FEATURES

4.1.5. RESULTS OF THE FOURTH STAGE: CABIN’S LOCATION

4.1.6. RESULTS OF THE FINAL STAGE: WILL YOU CRUISE?

4.2. ECO-CABIN RESULTS

4.2.1. DEMOGRAPHY OF THE RESEARCH

4.2.2. RESULTS FROM GENERAL STUDY OF PARTICIPANTS’ ECO-BEHAVIOR

4.2.3. RESULTS FROM THE STUDY OF INTEREST: PAIR COMPARISON OF CONCEPTS

4.2.4. RESULTS FROM THE STUDY OF ECO-EFFECTIVENESS

4.2.5. RESULTS FROM THE FINAL DIALOGUE
4. RESULTS

4.1. BigPic Results

4.1.1. Demography Of The Research

Data from the survey regarding gender, age and prior cruising experience of the participants are shown as follows:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age: Number of participants</th>
<th>Prior cruising experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female: 14</td>
<td>17-23: 3</td>
<td>Yes: 3</td>
</tr>
<tr>
<td>Male: 16</td>
<td>24-30: 6</td>
<td>No: 45</td>
</tr>
<tr>
<td>31-37: 9</td>
<td>38-44: 8</td>
<td></td>
</tr>
<tr>
<td>45-48: 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.1.2. Results Of The First Stage: General Perception

Of the study participants, only 4 knew the difference between Ferry and Cruise ship (two with prior cursing experience and two without prior experience). After becoming familiar with cruise ship and cruising, participants expressed their opinions and feelings about it. I categorized the responses from those with no prior cursing experience in 4 groups:

1. Positive perception

<table>
<thead>
<tr>
<th>Exciting</th>
<th>Cool</th>
<th>New friends</th>
<th>Experience Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beautiful</td>
<td>Relaxing</td>
<td>Fun</td>
<td>Entertaining</td>
</tr>
</tbody>
</table>

2. Negative perception

<table>
<thead>
<tr>
<th>Limited space</th>
<th>Closed</th>
<th>Slightly fake</th>
<th>Unsafe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costly</td>
<td>Not eco-friendly</td>
<td>Too slow</td>
<td>Sickness</td>
</tr>
</tbody>
</table>
Results from those who experienced cruising before indicated that their opinions are thoroughly based on the prior experience. Two of them were extremely satisfied with their cursing experience, stating “it was much better than expected”. They indicated that there were numerous activities onboard and they did not have chance to experience all of them due to the short time. On the contrary, one of the participants with prior cruising experience was not satisfied with the experience, describing it as a “disaster”. He explained that the cruise journey was very cheap and as a result services were poorly offered. The participant believed that in cruising industry quality attributes to price.

In response to the question whether they would like to experience cruise ship in future, 22 participants did not show any interest. Only 4 participants were strongly interested in experiencing cruise ship, two of them with prior cruising experience. The rest of the samples stated that they might be willing to try cruising once. Participants’ reasons for their willingness to experience cruising were mainly related to the above-mentioned “positive and negative perceptions”. However, some of the samples gave different explanations. For example, two participants said they were not convinced why they should choose cruising for their holidays. Another respondent believed that cruising experience is more suitable for after retirement, thus not the most exciting travel type for his age. Finally, one of the participants was not sure if she could easily find a cruise ship due to her nationality and visa requirements.

4.1.3. Results Of The Second Stage: Photo Album And Ideation

The next part of the research consisted of eliciting respondents’ opinion about what they
prefer/desire to experience on a cruise ship. As previously described, a photo album including 100 pictures was used in this stage. The pictures comprised four categories, resulted in the following outcome:

1. **General shape and appearance of cruises ships**

   Results of this part did not seem to have effect on eco-behavior of passengers. Nonetheless, the overall response to this part was significantly positive (describing that as “wonderful”, “beautiful”, “exotic”, “amazing” and “cool”).

2. **Interior design and layout of cruise ships**

   Results of this part seems to be useful for facilitating eco-behavior of passengers through UX. In terms of the interior design of cruise ships, majority of the participants did not comment on the pictures, instead shared their opinions about how a desired design would include. Stressing the importance of “design” in overall experience, they pointed to the following:
   - Interior design of a ship should not be ordinary and mainstream
   - Interior design of a ship must be different from usual designs
   - Interior design of a ship should not be artificial, because the ship is a part of nature
   - Extra luxury must be avoided
   - Design should provide maximum excitement and maximum comfort
   - Everyone wants to enjoy a good view
   - A messy design is not pleasurable
   - We want to have more natural stuff around (plants, water, etc.)
   - Could we have a transparent ship to see underwater and the view?
   - Design should make us feel safe
   - Interior design should be clear and accessible, because cruise ship layout looks confusing
   - Designed spaces should include a variety of places to serve those who prefer luxury and those who prefer comfort, freedom and cosiness
3. Onboard activities and services:

Results of this part is of importance for facilitating eco-behavior of passengers due to two reasons. First, activities and services can be used as incentives for passengers’ cooperation. Thus, experience designers can increase the eco-motivation of passengers by rewarding activities. Second, facilitation of eco-behavior can occur through desired services indicated by potential passengers. Therefore, experience designers have the opportunity to provide facilitating conditions of eco-behavior in services. Participants’ replies consisted of three categories:

► feelings and qualities they would like to experience

Majority of respondents stressed that they would expect to experience maximum comfort, excitement and relaxation. They, on the contrary, did not want to experience boredom, confusion, sickness, and ordinariness. They also mentioned that they would not like to experience “a fake” feeling.

► existing activities (shown in the photo album) they would like to experience

participants’ immediate reaction to the picture was significantly positive (ordered according to the number of samples showed interest):

<table>
<thead>
<tr>
<th>1. massage and spa</th>
<th>2. sunbathing</th>
<th>3. aqua park</th>
<th>4. activities resulting in making new friends</th>
<th>5. open air skyride</th>
<th>6. accessibility to internet and social media</th>
<th>7. receiving information about the region</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. all kinds of physical games</td>
<td>9. yoga and meditation</td>
<td>10. casino</td>
<td>11. show and concerts</td>
<td>12. open cinema</td>
<td>13. shopping</td>
<td>14. excursion</td>
</tr>
</tbody>
</table>
activities suggested by participants (not shown in the photo album)

This section includes ideas that participants suggested as something they would like to experience in a ship. In fact, these ideas resulted from samples’ brainstorming. Perhaps, some of the ideas are already used in cruise ships, but there was no picture of them in the photo album.

<table>
<thead>
<tr>
<th>Art gallery</th>
<th>Under water adventures</th>
<th>Graffiti experience</th>
<th>Karting</th>
<th>Biking</th>
<th>Golf</th>
<th>Track and field</th>
<th>Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferris wheel</td>
<td>Rollercoaster</td>
<td>Barbequing</td>
<td>Learning</td>
<td>Learning through discovery</td>
<td>Boating</td>
<td>Kiting</td>
<td>Camping</td>
</tr>
</tbody>
</table>

Iconic sustainability activities: This section consisted of some pictures of DIY activities, gardening and local bazar

Participants’ reaction to the pictures was interestingly positive. Nearly 28 of the participants showed strong interest in learning experiences to make handicrafts, gardening, buying and eating local/fresh fruits and vegetables and learning about environment and nature. Some of the respondents reasoned that since the journey is happening in the nature, cruise lines should provide opportunities for passengers to experience environmental-friendly activities. One sample argued that during DIY workshops he could make souvenirs for friends and relatives. Similarly, another participant stated that she would love to plant something local during the journey and take it home. Another person believed that these activities create a context in which passengers find new friends.
The two participants, who were not interested in experiencing these activities onboard, argued that they have never done activities as such, and prefer to experience familiar or exciting activities. One of them questioned the benefit of the activities, asking how these activities could possibly maximize his cruising pleasure.

► Cabin designs and facilities

All of the participants expressed their strong interest in spacious cabins with sea view. They attributed the interest to the following articles:

<table>
<thead>
<tr>
<th>Feeling of Freedom</th>
<th>Feeling safe</th>
<th>Feeling alive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relaxing</td>
<td>Privacy</td>
<td>Comfort</td>
</tr>
</tbody>
</table>

In contrast, all the respondents showed significant disinterest in small cabins without sea view. They linked the disinterest to the following articles:

<table>
<thead>
<tr>
<th>Feeling insecure</th>
<th>Seasickness</th>
<th>Feeling isolated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling claustrophobia</td>
<td>Feeling confused</td>
<td>Feeling unsafe</td>
</tr>
</tbody>
</table>

Majority of the respondents stated that they would like to have a well-designed cabin equipped with smart technology. However, one of the participants with prior cruising experience stated that despite the importance of cabin size and design in overall experience, he did not spend much time inside the cabin. In addition, some of the samples pointed out the importance of cabin's connectivity to Internet, as well as the location of the cabin and accessibility.

One of the respondents suggested that cruise lines provide tablets in cabin rooms for passengers. Another participant compared ship cabin with hotel room and stated that she would like to experience different features in a cruise ship. She explained that despite the similarity of the two, other factors must be taken into consideration such as passengers' fears. She believed that a well-connected, and well-designed cabin design could remarkably help the passengers to
overcome the fear. Interestingly, two of the samples argued that cabin is the best place to receive information and make decisions about activities and plans. One of them believed that cruise lines must provide interactive facilities in cabin to inform passengers about what is happening in the cruise. He explained the term “interactive” as a platform in which passengers can easily discover, find and choose what they want.

### 4.1.4. Results Of The Third Stage: Cabin Design And Features

The next stage of the research focused on Cabin, and factors might have influence on passengers’ experience in cabin. Regarding the cabin size, participants could either indicate the preferred size verbally, or mark on the floor. I categorized the answers as follow:

- 11 participants preferred 12-16 m³ cabin size
- 10 participants preferred 17-20 m³ cabin size
- 5 participants preferred 21-25 m³ cabin size
- 3 participants preferred 26-30 m³ cabin size
- 1 participant preferred 35 m³ cabin size

Those who had prior cruising experience chose 12-16 m³ as the preferred cabin size. I did not find any significant linkage between the answers and participants’ age, race, background and gender.

In response to the “how your dream cabin looks like”, participants’ answers were divided into two categories: (1) The general design of the cabin, and (2) Facilities and features. In terms of cabin design, participants were not decidedly opinionated. Nonetheless, all of the respondents pointed to desired interior colors and materials.

Expectedly, participants were more interested in interior spaces with window. Most of them showed strong interest in interiors with a combination of different colors. They also expressed
more interest in warm colors (as reported previously). Color, however, did not seem to strongly relate to eco-behavior of passengers. Yet, it is a significant component of UX that should be addressed in more details in future studies on UX and eco-behavior.

Stressing the importance of comfort in facilitating eco-behavior, these results seem to be important: Bunk beds were not very popular among the participants, pointing out the discomfort of the bed type. A sitting place (such as sofa) next to the window was positively marked by most of the respondents. Nearly 80% of the participants were not interested in luxury cabin style, preferring a simple well-designed space. Large bathroom received much attention from respondents, especially those with a bathtub. All of the participants referred to artworks and paintings on the wall as necessary elements. Some of the samples commented that despite the similarity of current cabins with hotel rooms, the design of a cruise cabin must be different from hotels. However, they could not explain how different they could be.

Facilities in cabins are greatly important for supporting eco-behavior of passengers through experiences. In response to the facilities and features in the cabin, respondents mentioned the followings:

<table>
<thead>
<tr>
<th>Hotel room facilities</th>
<th>Connectivity</th>
<th>iPad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books and magazines</td>
<td>Information about the cruise ship</td>
<td>Interactive informative displays</td>
</tr>
</tbody>
</table>

4.1.5. Results Of The Fourth Stage: Cabin’s Location

Results of this part indicate that cabin location can have influence on UX which potentially affects eco-behavior of passengers. Cabin location results shows that participants attribute crucial factors to the location of cabin such as safety and openness. As for the location of the cabin, first I asked them to mark the most liked and disliked locations on the ship model. Then I asked them to specify preferred cabin location. As shown in Fig.17, the front parts of Deck12 and 5 were more popular, meaning that the majority of the participants loved the mentioned
locations. In contrast, the middle part of Deck1 was the least liked location of the cruise ship.

Fig.18 illustrates the participants’ preferences in terms of the location of the cabins. It shows that Deck12, 15 and 5 were the most preferred decks on the cruise ship, respectively. In particular, there was a significant preference for the front part of Deck12. Six participants chose the uppermost deck (Deck15) but there was no interest in lower parts of the ship.
Participants’ were also asked to explain their reasons in choosing a location. Results showed that respondents’ reasoning was related to anticipated experience of safe/unsafe and openness/closed and isolated. Most of the samples argued that lower decks seem to be unsafe and isolated and they would not like to experience staying in lower decks. They also mentioned the view and height of the upper decks and believed that they are more open, safe and refreshing.

Despite the importance of cabin location in UX (which might also affect eco-behavior of passengers), results did not seem to be relevant to the present thesis. However, I suggest that the influence of cabin location on UX and eco-behavior should be studied in more detail in future researches. Therefore, I presented the results here for further researches.

### 4.1.6. Results of the final stage: Will you cruise?

In the final part of the design research, I asked the participants to share their opinions about the session. In addition, I asked them to re-state their opinion about cruising and explain whether the session had any influence on their perception about cruising. The overall feedback received was significantly positive. Almost all of the respondents stated that they learned more about cruising experience. Surprisingly, those with no prior cruising experience said that after the session they became curious and interested in experiencing a cruise journey (I would like to note that before starting the session, only 2 of the participants showed interest in experiencing cruise ship in future).
4.2. Eco-Cabin Results

4.2.1. Demography Of The Research

Data from the survey regarding gender, age and prior cruising experience of the participants are as follows:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age: Number of participants</th>
<th>Prior cruising experience</th>
</tr>
</thead>
</table>

4.2.2. Results From General Study Of Participants’ Eco-Behavior:

“I care, but in a cruise maybe less”

In response to how concerned they are about energy and water consumption in their daily life, only 6 participants showed strong concern. Twenty-six of the participants said that in their daily life they are concerned to some extent about energy and water consumption. Two respondents were not concerned at all about energy and water consumption, while 10 participants were slightly more concerned compared to them.

Participants’ reasons for their concerns about daily consumption of energy and water consisted of the followings:

- financial concerns: some were concerned about the financial influence of over-consumption on their daily life (electricity and water bills)

- sustainability concerns: some addressed the shortage of resources.

- beliefs and ethics: some attributed their concerns to beliefs about equality, ethical issues and religious motives.
habitual behaviour: some could not provide any explanation for their concerns, thus related them to habits or childhood education.

The study did not show any relation between answers and participants’ ages, background, gender and nationality.

Following the question about concerns, participants were asked how actively they try to reduce the energy and water consumption in their daily life. The overall response to this question was similar to the question about concerns. In addition, respondents’ reasons were also identical to those described in previous question. Similarly, participants’ background, age, gender and race did not seem to be influential in answers.

The last question of this phase sought to investigate possible differences in participants’ eco-behaviour in two different contexts: (1) home and daily life, (2) hotel room or in a cruise ship. Nine participants anticipated that their concerns and actions in terms of eco-behaviour would be definitely decreased in a hotel room and cruise ship. In contrast, three respondents believed that their eco-concerns/actions would remain entirely the same in both contexts. Equally, 30 participants stated that their concerns/actions might slightly change in a hotel room or ship.

Results indicate that majority of those who anticipated a change in their eco-concern/action while staying in a hotel room, were initially motivated by financial factors. In other words, their concerns and actions to reduce the energy and water consumption rooted in financial consequences of over-consumption. Thus, they assumed that their eco-behaviour might change as cruise passenger or hotel customer.

4.2.3. Results From The Study Of Interest: Pair Comparison Of Concepts

4.2.3.1. Informative Cabin Versus Non-Informative Cabin:

“Informative is cool, but do the cruise line really care?”

Results from the first comparison indicate that the majority of respondents (39 out of 42) showed considerable interest towards informative cabin. All of the respondents with prior
cruising experience were interested in informative cabin.

Nearly all of those were towards informative cabin commented that receiving information in regard with their actions is certainly appealing. Some reported that providing the passengers with information regarding their own consumption potentially leads to long-term eco-behaviour.

On the contrary, those who responded towards non-informative cabin reasoned that informing customers about their consumption on a cruise ship does not seem to be fruitful due to the characteristics of refreshing vacations. They underlined the importance of enjoyment for cruising experience and argued that informing customers about consumption irritatingly results in stress and concerns. Also, one of them argued that information regarding the consumption has no influence on her eco-behaviour since she is actively aware of her energy and water consumption. Another participant contented that passengers’ engagement in the process of reducing energy and water consumption entails equal effort from the cruise directors to convince the customers that the cruise line willingly seeks solutions for sustainability. He stressed that cruise lines should assure customers that the purpose of involving customers in reducing the consumption is not for the cruise line benefits, but for their concerns about sustainability.

4.2.3.2. Informative Cabin With Ship Instructive Feedback Versus Informative Cabin With No Feedback:

“Tell me how to”

The overall response to the comparison of informative cabin with eco guidelines and informative cabin without eco feedback was remarkably positive towards the former. The majority of respondents commented that informing customers about cabin consumption is not adequate and practical guidelines are needed. They stressed the fact that most of the customers do not know how to actively participate in reducing the energy and water consumption. One of the respondents illustrated the concept as a shift from WHAT (informative cabin) to HOW
(informative cabin with eco guidelines), and believed that the process is considerably logical. Another respondent pointed out that eco feedback can be used in other contexts. In other words, Instructive cabin fosters educational purposes towards eco-behaviour.

By contrast, a minority of respondents (nearly 10%) were not interested in eco feedback concept. They again reasoned that concerns about ecosystem distract the cruising experience. A few participants argued that they prefer to rely on his own choices rather than instructions from the ship. All the respondents who showed disinterest to eco guidelines did not have any prior cruising experience.

**4.2.3.3. Informative Cabin With Ship Instructive Feedback Versus Informative Cabin With Rewards:**

"Reward is a win-win game, but do it right"

Twenty-five participants showed strong interest to the informative cabin with rewards, while 17 of the respondents preferred instructive feedback concept. Interestingly, participants had noticeable different reasons for choosing reward concept. For example, one respondent likened the reward concept as an interactive game between the customer and the ship, and claimed that the combination of fun and responsibility can lead to long-term eco-behaviour. Another participants commented that reward makes the eco-effort more tangible, and the other respondent argued that reward concept works as a win-win game in which both actors are able to gain.

In contrast, those who preferred the instructive feedback concept referred to the following reasons: (1) *Immediate but not sustainable effect:* they argued that reward concept as a solution can only affect the eco-behaviour temporarily and consequently may not lead to long-term effects. (2) *Discourteous approach:* some commented that reward concept might imply a disrespectful method to reach eco-behaviour. (3) *Mistrust of the cruise company’s intentions:* one of the respondents questioned the reward concept and argued that it can infer manipulation to achieve more benefits. (4) *Resulting in stress:* some of the participants believed that interaction
with cruise ship in order to achieve a reward might lead to a slight stress. (5) Feedback offers sense of freedom: some of the respondents commented that feedback concept gives more freedom of choice to customers since no other factors except free information is provided by the cruise ship. In conclusion, the majority of respondents who were not interested in the reward concept reported that they found the eco feedback concept more rewarding. Finally, only one participant could not incline towards none of the concepts since both are in contrast with cruising experience. All of the participants with prior cruising experience preferred the reward concept.

4.2.3.4. Informative Cabin With Rewards Versus Informative Cabin With Penalty:

“Penalty? I am not in”

The overall interest towards informative cabin with penalty was expectedly negative. Comparatively, all of the participants were interested in the reward concept. However, a minority of the participants was not strongly interested in the reward concept, yet they chose the informative cabin with reward as their favored choice in comparison with the penalty concept. Participants’ reasons for preferring the reward concept were significantly similar. They pointed out the negative effects of the penalty concept on users’ experience in the context of a cruise ship and stressed the significant contrast of leisure and enjoyment with forfeiting payments. Moreover, the participants mentioned that the penalty concept would result in inevitable stress for customers, which potentially affects negatively on their future decisions to use the same cruise line.

4.2.4. Results From The Study Of Eco-Effectiveness: Pair Comparison Of Concepts

4.2.4.1. Informative Cabin Versus Non-Informative Cabin:

“Information works, if convincing”

Nearly eighty percent of those who surveyed believed that Informative cabin results in the
reduction of energy and water consumption. The participants’ reasons for supporting the informative cabin concept consisted of the following four cases:

(1) Making sense of actions and behaviours through information

(2) Involving passengers in reducing the consumption

(3) Providing customers with awareness of eco-behaviour

(4) Necessity of push or nudge factors to create eco-behaviour

Those with who preferred Non-informative concept argued that in spite of providing free information, the concept might result in negative reactions from customers since they might feel the concept fully in contrast with leisure and enjoyment. Additionally, they stressed the considerable contrast between the informative cabin and other services on cruise ships and believed that while passengers can easily observe the overall amount of consumption on a ship, he cannot be convinced to participate in reducing the consumption in the cabin. Almost all of the respondents with prior cruising experience showed more interest towards informative cabin.

4.2.4.2. Informative Cabin With Ship Instructive Feedback Versus Informative Cabin With No Instructive Feedback:

“Information is not enough, Tell people How”

Sixty percent of the samples strongly believed that informative cabin with instructive feedback results in the reduction of energy and water consumption. In addition, 30% of respondent admitted that instructive eco-feedback can lead to decreasing the consumption in cruise cabins. The positive responses on the question were based on the following reasons:

(1) Insufficiency of providing solely information: they argued that in order the process to become efficient, practical guidelines should be delivered since the majority of passengers are not completely aware of practical approaches for reducing the consumption. In other words, the
instructive guidelines can ease the process of conscious decision making towards eco-behavior,

(2) **Comparatively well-mannered approach to engage customers in sustainability:** the participants reasoned that solely information is not only insufficient but also not a completely reverential approach to involve passengers in reducing the consumption. They concluded that providing customers with practical guidelines seems to be more respectful and friendly. Consequently, the concept can lead to more contribution from passengers.

(3) **Comparatively more attractive:** they indicated that the concept of informative cabin can be considered as an interactive game between the ship and the customers. For this reason, providing the passengers with guidelines can make the “game” more attractive for customers.

A small minority of participants could not decide between informative cabin and informative cabin with eco-guidelines. They reasoned that both concepts benefit from advantages and suffer from disadvantages. For example, one of the respondents was uncertain about the effectiveness of eco-guidelines, stressing the short-term influence of the instructive feedback. Another participant believed that despite the positive effect of instructive feedback on passengers, the concept might be in dramatic contrast with leisure.

4.2.4.3. **Informative Cabin With Ship Instructive Feedback Versus Informative Cabin With Rewards:

“Reward motivates people”

In response to this question, the majority of participants were convinced that the reward concept is more effective in terms of reducing the energy and water consumption. Those who were strongly towards the reward concept believed that reward is an effective motivation for general public especially in the initial phase of an action. They also commented that since financial factors run the world, rewards play an important role in changing people’s behaviour towards sustainability. They reasoned that rewarding people for eco-behaviour is a win-win game between customers and service providers.
Yet, 20 percent of the participants believed that informative cabin with instructive feedback contributes the creation of eco-behaviour more effectively (10% were strongly towards the instructive concept). They argued that providing customers with rewards does not lead to long-term effects, while instructions can be used in other contexts as well. Therefore, instructive feedback concept can result in conscious eco-behaviour. In addition, they claimed that although the reward concept seems to be more incentive, it might be perceived as enforcement.

Finally, only one of the participants believed that informative cabin with instructive feedback reduces the consumption more effectively. He questioned the stability of the influence in reward concept and commented that short-term influential factors such as reward are not as effective as conscious approaches.

4.2.4.4. Informative Cabin With Rewards Versus Informative Cabin With Penalty:

“Penalty works, but not here”

The overall response to this question did not reveal any significant interest towards any of the concepts. However, with a slight difference, participants believed that the reward concept would be more effective. Finally, one of the subjects could not decide between the two concepts.

Their reasons to choose the reward concept included the following cases: (1) Comparatively positive and consequently leads to long-term influence, (2) Comparatively more well-mannered approach to engage customers in the process. In addition, one of the respondents emphasized the effectiveness of the reward concept and commented that rewards seem to be an optional case, while penalty can be perceived as enforcement, which is in contrast with leisure and enjoyment. In other words, the participant stressed the importance of the context (cruise ship) and believed that despite the effectiveness of the penalty concept, it cannot be used in the context of cruising.

In regard with the penalty concept, nearly all of those who supported the concept reasoned that penalty is more effective because physiologically people do not want to lose anything.
Therefore, they contribute to the process in order to prevent loosing. They also emphasized the contrast between penalty and leisure, yet believed that penalty results in more effective consequences in terms of reducing the consumption.

**4.2.4.5. Results From Study Of Interest Towards Concepts: Reward, Instruction, Information, Non-Informative, Penalty**

In the second phase of the study, we asked the participants to compare all of the design concepts at the same time and arrange them from the most favoured concept to the last favoured one.

Results from this question revealed that sixty percent of the respondents chose the informative cabin with reward as the most favoured concept, and 30% of them preferred the informative cabin with instructive feedback as the most desirable concept. Eight persons marked the informative cabin as the most favoured choice, while 4 of the participants selected the non-informative cabin.

The second most favoured concept of the respondent included the informative cabin with eco-guidelines (60% of the participants) and 30% of them chose the reward concept as the second most desirable concept. Only three of the subjects chose the informative cabin as the second favoured concept and no one selected the non-informative cabin.

The third favoured concept was informative cabin and only a minority of the respondents selected non-informative cabin and informative cabin with eco-guidelines as the third desired concept. Eighty percent of the participants reported the non-informative cabin as the fourth favoured concept, whereas only a few of them reported the reward and penalty concept as the fourth favoured choices.

Finally, nearly all of the respondents selected the penalty concept as the fifth favoured cabin type. No remarkable difference was found in responses from those with and without prior cruising experience.
4.2.4.6. Results From The Study Of Eco-Effectiveness Of Concepts: Reward, Instruction, Information, Non-Informative, Penalty

According to the results derived from the survey, eighty percent of the participants chose the informative cabin with reward as the most eco-effective concept. Thereafter, informative cabin with eco-guidelines was selected, whereas only a minority of the subjects selected informative cabin as the most eco-effective case. Expectedly, none of those who participated marked non-informative cabin as the first in terms of eco-effectiveness. The majority of respondents (%80) chose the Informative cabin with eco-instruction as the second eco-effective cabin type, whereas only 20% of them selected the reward concept as the second eco-effective case. Finally, the other concepts were not selected as the second choice of the participants.

Thirty percent of the subjects picked the informative cabin as well as the instructive cabin as the third eco-effective concepts, while only 10% of the respondents reported non-informative cabin and the reward concept as the third choice. As for the fourth eco-effective concept, over half of the subjects (60%) singled out the informative cabin and 20% of them picked the informative cabin with eco-guidelines and the penalty concept. Consequently, the reward concept and the non-informative cabin were not chosen by any of the study subjects.

Lastly, nearly all of the participants marked the non-informative cabin as the least eco-effective concept, whereas only two respondents chose the penalty concept as the fifth selection. The study did not show any significant difference in responses from participants with and without prior cruising experience.
4.2.5. Results From The Final Dialogue:

“Ideas could be effective, if…”

The overall opinion of respondents about the survey was positive in terms of method, facilitation and concepts. However, 4 participants were not completely convinced about the effectiveness of the concepts. Some participants pointed out variety of factors that may have influence on green behaviour such as cultural background, personal values and education. They believed that ideas as such cannot have a long term influence on people’s eco-behavior. On the contrary, some other participants showed interest in educational aspect of the concept and argued that the ideas may have long-term influence on passengers’ behaviour. I listed a summary of the main points of the final dialogue in four categories:

1. Stressing cruise line’s/concepts’ manner

- Cruise ships should not “surprise” the passengers with the eco-concepts.
- Concepts should not be “unexpected” for passengers.
- Reward can be “used off-shore”.
- Cruise ship companies should “not expect too much” from passengers.
- Reward could be “used onboard”.
- Cruise line must make a “close binding” with passengers beforehand.
- Cruise line should “convince” the passengers how their contribution can help the environmental stewardship of the company.
- Cruise line should “make them trust” the good will of the company.
- Information must be “easy to understand and brief”.
Information and instructions must be “clear and brief”.

Cruise line should create a possibility for passengers to “pre-experience the concept (to some extent)” before the journey.

Cruise line should “prepare passenger’s expectations” before the journey.

Cruise line should “create new values” for customers even before the cruising experience.

Cruise line must “convince the passenger” that the company cares about sustainability.

Cruise line must “clarify how it helps”.

2. Positive attitudes toward the concepts

“Reward” is very enforcing.

According to my prior cruising experience, “Reward is very effective”.

“Instructions and information” are very “educational.

3. Negative attitudes toward the concepts

Some “people do not care”.

Does it really “change anything?”

It “has a very small impact” compared to the whole consumption of a ship

“Cruise ship” itself is not eco-friendly at all.
4. **Conditional effectiveness of the concepts**

- *It is “all about how it is done by cruise line”.*

- *The “reward type” is of high importance.*

- *It will be effective “if passenger has prior experience or knowledge in using eco-friendly gadgets”.*

- *It is very “dependent on people’s values”*

- *It will be effective “if they know how to communicate with the concept”.*

- *Effectiveness “differs in different cultures”.*

- *It will be effective “if cruise line educates passengers beforehand”.*
5. DISCUSSION

5.1. PRE-DISCUSSION

5.2. DISCUSSING THE BIGPIC

5.2.1. DISCUSSION OF GENERAL PERCEPTION AND IDEATION

5.2.2. DISCUSSION OF CABIN DESIGN AND EXPERIENCE

5.3. DISCUSSING ECO-CABIN

5.3.1. PASSENGERS MAY CARE, IF CRUISE LINES TRULY CARE

5.3.2. OFFERING TANGIBLE BENEFITS

5.3.3. MANNER MATTERS

5.3.4. NO PRESSURE

5.3.5. CLEAR COMMUNICATION

5.3.6. MODERATE LEVEL OF ECO-COMMUNICATION

5.3.7. BUILDING TRUST BEFORE AND DURING THE JOURNEY

5.3.8. THE FIVE CRITERIA OF STRATEGY

5.3.9. SOCIO-ECOLOGICAL SEGMENTATIONS AND THEIR CRITERIA

5.3.10. A NOTE ABOUT SOCIAL BACKGROUND

5.4. GENERAL CONCLUSIONS OF THE RESEARCHES
5. DISCUSSION

5.1. Pre-Discussion

As previously explained, both studies sought to address how cruise lines could improve passengers’ cruising experience and at the same time facilitate the eco-behaviour of customers. Thus I argue again that in order to facilitate eco-behaviour in cabins, a broader system of experience must be studied. For this reason, I focus on the findings related to potential passengers’ anticipated experience of cruising and cabin area. The purpose of analysing the results is to provide designers and researchers with tools and data to use in the development of the product. As I illustrate in Fig.19, eco-behaviour in cabins is included in cabin experience, which is in turn contained in cruising experience. Accordingly, I argue that study and design of the three mentioned elements are and must be linked to each other. In other words, the system must be designed in a way that the expansion of one, results in the expansion of two others. In the next part, I discuss the findings of the two studies, reviewing the results from the larger container of experience (cruising experience) to eco-behaviour in cabins.

Fig.19. The thesis argues that eco-behaviour of passengers must be studied in relation with the containers of experience
5.2. Discussing The Bigpic

The discussion part of the first research seeks to investigate how the findings respond to the following research question:

*What are the UX potentials and threats of a cruise ship (larger context of experience), for facilitating eco-behavior of passengers in cabins?*

To answer, these sub-questions must be investigated:

- What features of experience can result in positive perception of cruising?
- What features of experience can result in negative perception of cruising?
- Would it be possible to offer iconic sustainability activities onboard?
- What features in cabin design can result in eco-cooperation of potential passengers?
- What attributes can be used as motivation for potential passengers’ eco-cooperation?

5.2.1. Discussion Of General Perception And Ideation

5.2.1.1. Lack Of Information, Need For Marketing

In the first study, participants’ age ranged from 17 to 48 that included a variety of potential passengers. In my study, I focused on the potential future passengers in terms of age due to the importance of their anticipated experience of cruising. The BigPic study shows a lack of familiarity with cruising among potential customers, which highlights the importance of marketing. Most of the participants could not differentiate between ferry and cruise ship, indicating the lack of information about cruising attributes such as services, length of the journey, destinations and routs. As reported in the previous section, only after familiarizing the participants with the notion of cruising, they could express their impression about it. For example majority of the samples were surprised about the variety of the activities offered in a cruise. This again underlines the necessity of strategic marketing to familiarize more customers.
5.2.1.2. Expecting Pleasure, Yet Safe

The positive perceptions reported by samples suggest that cruise lines should maintain or improve factors such as excitement, relaxation, beauty, social bonding. This means that cruise lines should design experiences resulting in positive feelings, as customers expect. I argue that the experience design in a cruise journey should create a balance between the desired experiences. In other words, cruising experience should include a balanced level of different attributes such as excitement, relaxation, and social interaction.

Regarding the negative perceptions indicated by respondents, many of the samples argued that cruise ship looks like a limited and closed context to spend holidays. However, this perception is not based on facts. My personal communication (2012) with first time passengers as well as reviews from cruisers shows that despite the expectation, first time cruisers were amazed by the variety of activities during their journey (Reviews published by passengers in Social media). Thus, the negative perception in regard with boredom and limited possibilities are rooted in the lack of prior experience. Underlining the importance of marketing, cruise lines should find ways to tackle that negative perception. Safety was one of the most important factors indicated by participants. Referring to ship accidents, they were concerned about the safety of the journey. Although, factors such as safety cannot be completely guaranteed, cruise lines should also tackle this negative perception. We will see that in other parts of the study, safety has been reported as one of the main concerns of the respondents.

5.2.1.3. Less Demands For Artificality

As shown in the result, many of the participants had negative opinion about cruise ships being “artificial”, “fake experience” and “over luxury”. This negative perception is in fact in line with the objectives of the present thesis, since the luxurious nature of cruising is considered to be in contrast with passengers’ eco-behaviour. Fortunately, the negative opinion about artificial and extremely luxury experiences is also reported in other parts of the study.
Those negative perceptions of cruising in regard with health, such as seasickness are not completely under the control of cruise lines and ship designers, yet could be reduced.

5.2.1.4. Social Bonding, A Potential For Behavioral Exchange

According to the results, many participants preferred to experience cruising with their friends or relatives. Therefore, ship designers should consider the ways to facilitate social bonding. As for the thesis topic, designers can see it as an opportunity due to the influence of people on each other’s behaviour. I believe that providing customers with opportunities to travel with their social circles is a potential to facilitate eco-behaviour of passengers.

5.2.1.5. To Design, To Avoid

According to the results, I have listed the attributes reported by participants, showing what they expect to experience in a cruise ship.

<table>
<thead>
<tr>
<th>Excitement</th>
<th>Safety</th>
<th>Relaxation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort</td>
<td>Discovery and learning</td>
<td>Nature-related experiences</td>
</tr>
</tbody>
</table>

Similarly, I have listed the attributes that participants did not want to experience.

<table>
<thead>
<tr>
<th>Artificiality</th>
<th>Over-luxury</th>
<th>Chaos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confusion</td>
<td>Ordinariness</td>
<td>Sickness</td>
</tr>
</tbody>
</table>

Referring to the discussion about mapping proactive UX design in cruising experience (the first part of the thesis), nearly all of the above mentioned attributes are designable. However, due to the variety of passengers in terms of cultural background and personality, the value of the experience might differ. For example, a passenger might perceive the design of a space as over-luxury while others have different opinion. Similarly, some experiences might be perceived as boring to a group of customers, while another group finds it entertaining. This filed of UX design requires ongoing studies, especially in ethnography.
5.2.1.6. Need For Efficient Feedback System

An efficient feedback system to evaluate the design is of critical importance. As for the present thesis in particular, a feedback system is necessary for two reasons. First, engaging customers in environmental stewardship of cruise lines has not been thoroughly examined by cruise companies. Thus, users’ interaction with the design must be evaluated. Second, due to the newness of the concept in cruise industry, it has a long way ahead to develop. Certainly, users’ feedback has an essential role in product development process.

5.2.1.7. Engaging People In Concept Generation

Results from the Big Pic study indicate that potential passengers are considerably opinionated about activities they would like to experience. As reported, many of the participants in my study suggested activities that were not shown in the photo album. That arises the question for designers how to elicit the ideas from potential passengers. I the next chapter I will suggest UX designers a similar way that I used in BigPic study to elicit ideas about designing activities in a cruise ship. Despite the fact that some of the suggested activities are not practically feasible on a ship, designers can use the idea to design activities resulting in similar experiences. For example, if constructing Ferris wheel on a ship is not completely possible, designers could focus on the characteristics of the experience Ferris wheel creates and design a new product based on that.

5.2.1.8. Desire For Sustainability-Related Activities Onboard

One interesting finding in BigPic research is that majority of participants expressed strong interest in experiencing iconic sustainability activities. Participants’ reasons are also impressive, referring to three benefits of experiences as such: (1) learning skills (2) making souvenir, and (3) socializing. This finding, while preliminary, suggests that cruise ships’ service designers can shift from designing over-luxurious experiences to socio-cultural ones. We discussed in the first chapter, those customers with less/no consciousness and desire for sustainability tend to find a benefit in products or actions: “What is in it for me?” (Belz, 2008). Here I argue
that according to my research, potential passengers found values and benefits in experiencing iconic sustainability activities such as DIY workshops. However, despite this promising result, a broad research is needed to design appropriate workshops for certain passengers in terms of age, social background and origins.

5.2.2. Discussion Of Cabin Design And Experience

5.2.2.1. Demand For Well-Designed And Well-Connected Cabins

Participants’ desires in terms of the attributes they want/do not want to experience in cabin is remarkably similar to those reported previously. However, concerns about isolation, safety and claustrophobia are more highlighted in regard with cabins. These findings suggest that cabins could have considerable influence on the overall experience of cruisers, which in turn affects eco-cooperation of passengers in environmental stewardship of the cruise line. Connectivity to Internet and to the ship, as well as accessibility and location of the cabin were also emphasized by respondents, which are likely to be related to the mentioned concerns. One interesting finding is that the importance of the cabin’s location is reported as an important factor influencing the overall experience. This supports the objectives of my constructive design research, using a physical model of a ship.

5.2.2.2. Cabins, Correct Context To Be Informed

As reported, some of the participants emphasized that they would like to experience different features in cabins, compared to hotel rooms. Yet, they could not describe what different attributes they prefer to experience in a cabin. A possible explanation for this might be that hotel rooms are merely expected to offer pleasurable accommodation, while ship cabin is part of a larger experience context (cruise ship). Therefore, cabins are not seen as only a space to accommodate passengers, but a subsystem in a larger system of experience. This again highlights the importance of cabins in the overall experience of cruising. Additionally, another possible explanation could be that passengers would like to be connected to the events and experiences in/outside of the ship, while staying in their cabins. This interpretation is in line
with what participants emphasized afterwards, suggesting that cabins are the best place to receive information, decide and plan. This point is one of the main findings of the research in regard with my thesis. In fact, the finding opened a potential opportunity for designing a strategy to facilitate eco-behaviour in cabins.

5.2.2.3. Larger Cabins, Larger Context Of Eco-Behaviour. Yet, Controversial

Findings about preferred cabin size cannot be thoroughly interpreted except that the average desired size is around 16m³. No specific relation between respondents’ background, age or gender was found. However, I argue that cabin size could have a notable influence on overall experience, since openness was one of the main concerns of the potential passengers in cabin. Being aware of limitations in layout planning of ships, I believe ship designer must reconsider the importance of cabin size. My personal communication with experts in STX Cabin Design (2013) indicates that cruise lines tend to claim that smaller cabins could motivate customers to spend more time out of their cabins. However, I am not convinced if designing smaller cabins has insignificant influence on the overall pleasure of cruising experience. Again, I refer to the findings about potential passengers’ concerns in attributes of cabin experience, such as claustrophobia, isolation and insecurity. In addition, slightly larger cabins provide opportunities for cruise lines to create facilities in order to engage passengers in companies’ environmental stewardship. It is worth mentioning that larger cabins would directly lead to higher prices.

Admittedly, providing passengers with more comfortable services could result in more efficient cooperation from customers. As some of the participants stated, if cruise line expect cooperation from passengers in terms of eco-behaviour, it should convince the customer that the cruise line also cares for the environment and passengers.

5.2.2.4. Tablets In Cabins, A Tool For Passengers-Ship Interaction

Some of the participants suggested that cruise lines provide them with tablets during the journey to ease their connectivity. Despite my uncertainty about profitability of the idea for cruise lines, I see that as an opportunity for cruise lines to market their products onboard as
well as giving information to customers. In addition, the idea seems to be in accord with the “Eco-cabin” concept, using the tablet as an optional device to facilitate the eco-behaviour of passengers.

**5.2.2.5. Openness, Accessibility, View And Safety: Features Of Desired Cabin Location**

Findings about the preferred locations of cabins show that safety, openness, view and accessibility have a major role in their choice. This is thoroughly in line with my previous findings about potential passengers’ anticipated experience in cabins. As shown in the results, the most liked locations on a ship and the most preferred location of cabin are nearly interchangeable. Admittedly, cruise lines prefer to make the most liked locations accessible for all the passengers. Therefore, from the experience design point of view, locating cabins in the most liked places of a ship is not reasonable. Yet, experience designers can apply the features reported by participants (such as perception of safety and openness) in the design of cabins.

**5.2.2.6. Importance Of Participatory Design And Research**

Finally, one unanticipated finding was that after the design research, participants’ desire for cruising experience increased. Interestingly, respondents showed more interest and curiosity in experiencing cruise journey. This result may be explained by the fact that participants became more familiar with the notion of cruising, thus interested in experiencing. Another possible explanation is that during the session, potential passengers were involved in the development of the product and consequently became more connected to the topic. Hence, it could conceivably suggest the importance of co-design and participatory-design in terms of engaging potential customers in the process of product development. This was clearly stated by two of the participants. One pointed her lack of information about cruise ships and said: “I would have never thought about cruising, but it seems to be cool!” The other one humorously stated: “If they ask me what I want, as you did today, I will book my ticket tomorrow!” It must be noted again that lack of information about cruising is one of the main factors ship companies must focus on. That in turn highlights the importance of strategic marketing and communication.
5.3. Discussing Eco-Cabin

The discussion part of the second research intends to investigate how the results correlate to this research question:

*What strategies can be used to facilitate eco-behavior in cabins?*

Thus, the following sub-questions must be investigated:

▶ *What strategies are more effective (information, instructions, rewards or penalty)?*
▶ *What are the constraints of potential/passengers’ eco-cooperation?*
▶ *To what extent, facilitation of eco-behavior should take place?*
▶ *Where is the initial point of facilitating strategies?*
▶ *How to evaluate and improve effectiveness of the strategies?*

Purposefully, the sampling strategy of this study was different from the previous one, in terms of the number of participants with prior cruising experience. In Eco-Cabin study, half of the respondents had prior experience in cruising due to the newness of the concept. Since Eco-cabin concepts has never been used or examined by cruise lines (to the best of my knowledge), I chose more participants with prior experience in cruising compare to BigPic study. Yet, the number of participants with no prior cruising experience was two times more than those with prior experience. This is because my main thesis study group consists of potential passengers.

As discussed in the literature review, the purpose of this study consists of finding strategies to encourage passengers from being “socio-ecological passive” to “approachable” and finally to “socio-ecological active”. Fortunately, the results show that the variety of samples in terms of eco-concerns/actions is in line with thesis objectives. As noted in the findings, 6 out of 42 participants reported that they are strongly concerned about their daily energy and water consumption, thus actively try to reduce the consumption. This group of respondents can be
categorized as socio-ecological actives, according to Belz’ segmentation (2008). Twenty-six of the participants showed moderate concerns about energy and water consumption in their daily life and daily actions, therefore can be categorized as socio-ecological approachable. This provides potential opportunities for my thesis topic, which is aiming for facilitation of eco-behaviour of socio-ecological passive/approachable passengers.

5.3.1. Passengers May Care, If Cruise Lines Truly Care

One of the most important findings of Eco-cabin study is that passengers expect adequate effort from cruise lines in terms of environmental stewardship as well as providing services for customers. This means that passengers’ cooperation might be closely dependent on two factors: (1) quality of services which indicates company’s effort to provide pleasurable experiences, and (2) being convinced that the company itself makes effort to environmental stewardship. This highlights the importance of UX in environmental stewardships of cruise industry. In addition, the findings underline the crucial role of efficient communication and marketing in the topic. This is again consistent with the discussion in the first part of the thesis, pointing to the importance of design+communication in facilitating eco-behaviour of passengers.

5.3.2. Offering Tangible Benefits

Participants’ reasons supporting the reward concept are mainly related to the advantage of receiving reward. Additionally, as one of the participant commented, receiving reward for eco-behaviour, makes the effort more tangible. As expected, respondents also highlighted the positive aspects of reinforcement. Interestingly, the findings show that some potential passengers see the informative concept and the reward concept as “games to play”. This also underlines the importance of experience design in engaging passengers in environmental stewardship. In addition, potential passengers expected to experience an interactive feature, between cruise line and passengers. Therefore, designing an interactive platform in which passengers could receive instructions and rewards seems to be effective.
5.3.3. Manner Matters

As noted, the results indicate that potential passengers prefer to receive information, instruction or rewards in a playful, friendly and brief approach. This is also one of the major findings of the research and will be used in my design proposal. It must be taken into consideration that despite the reported interest in informative and instructive concept, some of the participants preferred not to receive information and instruction. This again calls the attention to the manner of giving information and instructions. Which may imply the necessity for designing “optional” features.

5.3.4. No Pressure

As expected, participants did not favour the penalty concept. Thus, I exclude the concept for the design part. Admittedly, the disinterest in the concept attributes to the nature of cruising experience, in terms of being relaxing, comfortable, and pleasurable. However, more research in this topic (penalty as sustainability reinforcement) will be needed for future studies. As previously mentioned, the whole process of passengers’ engagement must be optional. Passengers should be able to start or terminate their eco-cooperation at any stages of the journey.

5.3.5. Clear Communication

In regard with disinterest towards reward concept, findings indicate that three topics have major roles in participants’ opinion: (1) Efficiency: short-term effect of rewards, (2) Manner: manipulative and discourteous, and (3) Trust: doubting company’s intention due to the use of reward. Given that, design solutions must concentrate on tackling the mentioned factors. However, the first factor, efficiency of the design concept is not entirely provable to customers and are not necessarily convinced about the eco-efficiency of a design solution unless the effectiveness is tangibly shown (This in turn requires study of topics such as eco-behaviour indicators, measurements and sustainability visualization). Regarding the second and the third factors (manner and trust), the importance of design+communication is underlined again.
5.3.6. Moderate Level Of Eco-Communication

As described in methodology, in the study of interest I sought to address personal interest of participants about the concepts. But, in the study of eco-effectiveness, I tried to elicit participants’ opinion about eco-effectiveness of concepts on passengers in general. In other words, the first study questions “How do you like the concept in comparison to the other one?” and the next study aims for “How effective do you think the concept is for reducing energy and water consumption?” One important finding in study of eco-effectiveness is that participants stress notably more on eco-awareness. They argue that awareness plays a major role in eco-behaviour of passengers. Yet, they did not underline “eco-awareness” in response to the study of personal interest. This is consequently a tricky subject for designers to tackle. Despite that I could not find a convincing explanation for this contrast, I suggest providing passengers with a moderate amount/level of eco-awareness. Although the term “moderate” is not completely clear, it could be defined by common sense of UX designers. In fact, finding the adequate amount/level of delivering eco-awareness requires a broad research.

5.3.7. Building Trust Before And During The Journey

Another important finding of this part includes the comparison of overall amount of consumption in a ship with cabin consumption. The visible amount of waste and consumption in a cruise ship will not motivate passengers to reduce their cabins’ consumption. This is in fact one of the most crucial issues in my thesis. Accordingly, I argue that eco-behaviour in cabins is systematically linked to the larger context (cruise ship). Cruise lines cannot expect passengers to cooperate in their cabins for environmental stewardship of the industry, unless the company (1) facilitate eco-behaviour in the whole ship, and (2) genuinely prove the effort of the cruise line for sustainability. For further research, I suggest a comprehensive study on facilitating eco-behaviour in different locations and activities in a cruise ship. As for the present thesis, I suggest informing cabin passengers about the possible promising moves of the cruise line towards environmental stewardship. In addition, reporting and comparing the overall consumption of the ship with passengers’ cabins may be fruitful; showing the amount of influence passengers
could have in creating a greener journey. Finally, as participants stated, eco-communication should start before the journey, not to surprise passengers with a new concept in cabins.

5.3.8. The Five Criteria Of Strategy

This study has identified that in comparison of interest towards concepts as well as the eco-effectiveness of them, participants raised the following five issues, indicating their rationales for choosing a concept:

1. Trust/distrust

The factor of trust/distrust was reported several times by samples, mainly questioning the intention of cruise companies for engaging customers in their environmental stewardship.

2. UX: user experience

Participants addressed the influence of concepts of the overall experience of cruising (positively/negatively).

3. Manner

One of the major factors repeatedly addressed by participants was the manner of cruise line in terms of the way information/instructions/rewards are presented. This factor is directly linked to the previous one (UX) due to the influence of manner in experience.

A crucial finding in regard with manner is that majority of respondents believed that passengers should not be confronted abruptly by such a new concept in cabins. They argued that concepts such as “informative cabin and Instructive cabins” are not what passengers normally expect to see in a cabin, thus might not be favoured by passengers.
4. Utility

The findings show that potentials passengers expect to receive benefits in return for their cooperation in environmental stewardship of the company. Utility expected from potential passengers may include awareness, information and rewards.

5. Effectiveness

As discussed before, the effectiveness of the concepts is one of the controversial aspects of the thesis, which has been also addressed by participants. While some participants believed that informative/instructive/reward cabin could be effective in terms of facilitating eco-behaviour, some other respondents were not optimistic about the effectiveness of the concepts. Admittedly, the effectiveness of concepts cannot be evaluated at this stage, since the concepts have not been designed and used by customers. Therefore, investigating participants’ perception about the effectiveness of concepts is only because of exploring the idea from different perspectives. Another objective for questioning the effectiveness of concepts is to discover if participants could suggest other effective approaches to facilitate eco-behaviour. However, responses failed to address other approaches than the ones introduced in the research.

5.3.9. Socio-Ecological Segmentations And Their Criteria

As noted, the five above-mentioned factors were the main issues raised by participants. I reported earlier that I could not find any notable linkage between participants’ responses and their ages, races, backgrounds as well as gender. However, I believe that respondents’ socio-ecological consciousness and willing to act upon that may have a relation with their answers. Therefore, I compared participants’ responses to the first part of the survey (eco-concern/action) with the five issues raised by them. Using Belz (2008) segmentation, findings show the following facts (Fig.20):

- *Socio-ecological passive* respondents pointed more to “Utility, Distrust, UX and Effectiveness” respectively. I found that socio-ecological passive respondents repeatedly questioned the benefits of cooperating with cruise companies for reducing the overall consumption. They
also showed more distrust towards cruise companies. The last but not the least, this segment showed significant concerns about the contrast of eco-behaviour and pleasurable experiences.

- **Socio-ecological approachable** respondents pointed more to “Manner, UX, Effectiveness, Trust/Distrust, and Utility” respectively. This segment showed much attention to the cruise line’s manner in encouraging eco-behaviour of passengers. They were also notably concerned about the influence of the concepts on the pleasure of cruising experience. Similar to the previous segment, the approachable participants were not entirely sure about the effectiveness of concepts. They also expected to be convinced about the intention of cruise lines as well as companies’ real cooperation in environmental stewardship of the industry. Finally, a minority of this segment expected to receive advantages in return to their cooperation with cruising company.

- **Socio-ecological active** respondents pointed more to “Effectiveness and Trust/Distrust” respectively. They questioned the effectiveness of the concepts compared to the overall consumption of a ship. They were not also totally convinced about the effectiveness of the concepts on eco-behaviour of passengers.
5.3.10. A Note About Social Background

It is worth mentioning that due to a different research, I conducted the same study with Chinese participants (results are included in the present study). According to the findings, Chinese participants showed significantly stronger interest in the reward concept. Many of them argued that in Chinese cultural behaviour, receiving benefits, bonuses and rewards is of vital importance. They explained that seeking cooperation from Chinese passengers requires strong positive/negative reinforcements. Nevertheless, I cannot personally approve my Chinese participants’ comments on their own culture. Yet, this finding highlights the fact that UX designers must conduct a broad study in ethnography and cultures of customers, to create a desired package of information, instructions and rewards.
5.4. General Conclusions Of The Researches

Results obtained from the two studies, include a variety of topics for further researches. In the present work, I elicited those findings that are consistent with the outlined objectives of the thesis. My observation of the results obtained from BigPic study indicates that they can be categorized into three groups:

<table>
<thead>
<tr>
<th>(1) experience-related desires</th>
<th>(2) experience-related concerns</th>
<th>(3) experience-related ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiencing excitement</td>
<td>Experiencing comfort</td>
<td>Experiencing openness</td>
</tr>
<tr>
<td>Experiencing beauty of nature</td>
<td>Experiencing Social interactions</td>
<td>Experiencing discovery and learning</td>
</tr>
<tr>
<td>Experiencing boredom</td>
<td>Experiencing artificiality</td>
<td>Experiencing over-luxury</td>
</tr>
<tr>
<td>Experiencing isolation</td>
<td>Experiencing chaos</td>
<td>Experiencing confusion</td>
</tr>
<tr>
<td>Experiencing claustrophobia</td>
<td>Experiencing ordinariness</td>
<td></td>
</tr>
</tbody>
</table>

The key findings in the first group, experience-related desires, includes the following desires:

- Experiencing excitement
- Experiencing comfort
- Experiencing relaxation
- Experiencing openness
- Experiencing beauty of nature
- Experiencing Social interactions
- Experiencing discovery and learning
- Co-Experiencing with social circles

The key findings in the second category, experience-related concerns, includes the following concerns:

- Safety
- Health
- Connectivity
- Accessibility
- Experiencing Boredom
- Experiencing Ordinariness
- Experiencing Isolation
- Experiencing artificiality
- Experiencing over-luxury
- Experiencing claustrophobia
- Experiencing chaos
- Experiencing confusion
The findings in the third group, experience-related ideas, include numerous activities reported in BigPic results. The ideas in turn can be categorized into the following topics:

<table>
<thead>
<tr>
<th>Ideas for excitement</th>
<th>Ideas for physical games</th>
<th>Ideas for social interaction</th>
<th>Ideas for relaxation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(attributing: height, water, suspension, competition, and sliding)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideas for learning</td>
<td>Ideas for creating</td>
<td>Art-related ideas</td>
<td>Ideas for connectivity</td>
</tr>
<tr>
<td>(attributing: DIY sessions and nature-related activities)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In regard with Eco-cabin study, the key findings in line with the objectives of the thesis consist of:

- **Cabin is reported as an appropriate context for receiving information (in general)**

- **Cruise lines can use a combination of the three concepts: Rewards, Instructions, and Information for facilitating eco-behaviour. However, the following issues are of vital importance:**

  1. **Manner of interaction with passengers**

     must be respectful, clear, encouraging, optional, brief, entertaining and familiar

     must not be disrespectful, forceful, distracting, abrupt and unfamiliar

  2. **Building Trust with potential passengers**

     Cruise line’ strategies must be able to convince passengers that company is actively working on sustainability development of the industry.

  3. **Providing passengers with advantages**

     Benefits could include awareness, information and reward. In addition, cruise line must assure the passengers that the company is committed to provide the customers with pleasurable services and experience.
Passengers’ enjoyment of cruising experience should not be dependent on their cooperation with environmental stewardship of the company.

(4) Influence on cruising experience

This refers to the same factors regarding the manner of interaction. Additionally, the concept could possibly result in pleasurable experiences. For example, the way of providing information or rewards could be playful or interactive. Also, incentives could be related to another pleasurable activity/experience/game happening in the cruise ship.

(5) Effectiveness of passengers’ cooperation must be presented to them

Passengers must be convinced about the potential effectiveness of their cooperation in environmental stewardship of the cruise line.
6. SUGGESTION

6.1. DESIGN/STRATEGY GUIDELINE

6.2. DESIGN RESEARCH METHOD SUGGESTION

6.3. USER JOURNEY EXAMPLE
6. SUGGESTION

In this part, I suggest a design/strategy guideline to experience designers and researchers which includes:

- **Research methods and tools for UX-Design researchers aiming for product development in cruise industry**

- **A proposed process for UX-Designers of cruise ships, aiming for facilitating eco-behaviour of passengers in cabins**

- **A scenario as an example of the proposed design/strategy process**

The suggested guideline is based on the studies conducted in the present thesis. However, the idea of engaging passengers in environmental stewardship of cruise lines has not been examined before. Thus, validity of the proposed design/strategy cannot be confirmed yet. As stated previously, this study is a preliminary attempt and requires further developments. Moreover, the variety of passengers in terms of origins, personal/cultural values, education and age is of critical importance. Therefore, a contextual approach to the present topic is recommended.

As for expectation, the design/strategy is merely a proposed process based on my findings. Admittedly, this study does not claim to entirely solve the environmental impacts of cruise industry.
6.1. Design/Strategy Guideline

The present illustration is a brief guideline for cruise ship designers and researchers, which consists of three phases:

| (1) before the journey | (2) during the journey | (3) after the journey |

In this scenario, “before the journey” phase refers to the period between purchasing the ticket and the actual cruising. Each phase consists of the following three parts:

- What objectives
- What to do
- What to consider

In the next part, an example of the guideline will be suggested.
“Communication for involving passengers in environmental stewardship of cruise lines starts before the journey. Passengers are encouraged to cooperate with cruise line before the journey, enabled during the journey and engaged with cruising community after the journey”
BEFORE THE JOURNEY

What objectives

1. Increasing passengers’ enthusiasm and curiosity for the journey
2. Familiarizing passengers with the ship, experiences, and sustainable stewardship
3. Preparing passengers for the experiences including those related to eco-behavior

Considerations

1. Messages must be brief, clear and respectful
2. Easy interaction between passengers and cruise line is of importance
3. Communication with passengers before the journey could be playful and entertaining
4. Communication with passengers before the journey should not be distracting
5. Cruise line should emphasize merely on good news in regard with sustainable stewardship and passengers’ cooperation
6. Cruise line should associate eco-behavior of passengers with positive self-image of themselves
7. It is recommended to visualize information about sustainability improvements (preferably without indicating numbers to avoid confusion)
8. Cruise lines should stress the positive role of passengers in sustainability developments of the industry
9. Cruise line can provide the passengers with short instructions for eco-behavior before the journey
10. Cruise line can provide the passengers with incentives for joining eco-communities before the journey
11. Passengers’ cooperation with sustainable stewardship of the company must be entirely optional, yet encouraged
12. Passengers should not be over loaded with information and communication
13. To facilitate the communication, designing a mobile application is recommended
BEFORE THE JOURNEY

What to do

- Introducing sustainable stewardship of the cruise line
- Educating passengers for eco-behavior during the journey
- Introducing eco-concepts and ideas they may experience during the journey
- Introducing activities and experiences in the ship
- Motivating passengers to cooperate in environmental stewardship of the cruise line
- Motivational incentives may include rewards.
- Reporting the progress of cruise line towards sustainability developments
- Stressing the importance of passengers’ cooperation in company’s success in terms of sustainability developments
- Showing the role of passengers in company’s sustainability developments. This might include comparisons, reports and eco-visualizations
- Showing the progress of cruise line in sustainability developments, compared to other companies and previous years/months
- Showing how previous passengers cooperated with the company and received incentives in return

Motivating passengers to join communities before the journey

Providing interactive platforms to facilitate the engagement
DURING THE JOURNEY

What objectives

1. Passengers’ satisfaction of experiences
2. Passengers’ active cooperation with sustainable stewardship of the cruise line
3. Receiving passengers’ feedback on experiences

Considerations

1. In this phase, cruise lines must focus on creating pleasurable experiences
2. Facilitating eco-behavior must also occur in designed experiences
3. Rewards must be tangible, achievable, and motivating
4. Passengers’ cooperation must be optional
5. Feedback system should cover all the experiences aiming to further developments
6. Feedback system should be brief and short
7. Feedback system should not question many experiences at once
8. Feedback system should occur daily and continuously
9. The time gap between the actual experience and asking for feedback should be as short as possible
DURING THE JOURNEY

What to do

- Providing information and instruction to facilitate eco-behavior (inside and outside of cabin)
- Providing passengers with an interactive display in cabins to receive information and instruction
- Providing a feedback system in cabins, integrated in the same interactive display
- Easing the eco-behavior by using smart technologies in cabins

- Rewarding the eco-behavior
- Providing sustainability-related experiences onboard, associating with benefits such as learning and creating experiences
- Embedding eco-behavior in pleasurable experiences
- Showing positive immediate report of passengers’ consumption in cabins
- Making the eco-behavior an optional choice
- Rewarding passengers for their feedback
- Making the feedback process easy, short and playful

- Conducting activities/experiences for communities that shaped before the journey
- Showing positive reports of other cabins
- Showing positive reports of previous journeys
- Exhibiting examples of sustainability-related activities done by previous passengers
AFTER THE JOURNEY

What objectives

1. Building brand loyalty for future sales
2. Obtaining passengers’ feedback for product developments
3. Engaging passengers in ideation for future developments

Considerations

1. Rewarding passengers for future cooperation is essential
2. Feedback system after the journey could be more comprehensive and detailed
3. Future communication with passengers must be optional
AFTER THE JOURNEY

What to do

- Providing platforms for customers’ ideation
- Providing online platforms for passengers to share their pictures, texts and videos of the journey
- Keeping the communication with passengers
- Inviting passengers for participating in design research sessions
- Informing passengers about positive aspects of their cooperation during the journey
- Showing ideas and concepts suggested by other passengers
  Motivating passengers to share their experiences in cruise line’s online pages

Checkbox

- Motivating passengers’ ideation with rewards
- Motivating passengers to participate in design research sessions by rewards
6.2. Design Research Method Suggestion

Design research methods conducted in the present thesis have the potential to be used by designers and researchers in cruising industry. For example, the photo album in my first study, was proved to be a suitable tool for design researchers in terms of facilitating the research and ideation. Also, the physical model of the ship in the same study, facilitated participants’ imagination.

Accordingly, I suggest two types of platforms for design researchers in the field of cruising experience:

- **Online ideation platform**: An ideation website for before and after the journey
- **Onboard ideation room**: An ideation room on the ship for during the journey

Design research constructions (photos and physical/virtual model) can be used in both ideation platforms. In the online platform, customers are provided with pictures to facilitate the ideation. Also, I suggest an online co-design platform in which customers can design interiors, services, layout and routs of the ship according to their own desires.
before the journey  
Online Ideation Platform

middle

main question:
What do you expect to experience?

Tools
- Online photo album
- Virtual design platform

during the journey  
Onboard Ideation room

main question:
What is missing?

Tools
- Online photo album
- Virtual design platform

after the journey  
Online Ideation Platform

main question:
What do you suggest?

Tools
- Online photo album
- Virtual design platform

participation inspired by rewards
6.3. User Journey Example

This part consist of a “user journey” as an example of the proposed process. As mentioned before, communication plays a critical role in the process of facilitating passengers’ eco-behaviour. Thus, due to the growing use of technology and mobile applications, I suggest two products in the following example.

First, I suggest that cruise lines could exert more effort on designing mobile applications for potential/passengers. My investigation indicates that cruise lines have not focused adequately on mobile applications. I also found that all of the cruise lines’ mobile application available, include nothing or only a few features for before the journey. For example, Norwegian and Carnival cruise lines have only one feature available in their apps for before the journey, which is a countdown page. Similarly, Disney Cruise Line has only the same feature available before the journey, yet, introduces some other features of the app such as live navigation of routs and Deck by Deck map. Another application available in mobile app store is called ShipMate which includes information about majority of ships and lines. In this application, user can receive information about cruise ships, watch live cam streaming of cruise ships, find ships’ locations and, share photos and see other passengers’ pictures of their cruising experiences. However, this application is not for a specific cruise line and does not seem to fit the purpose of my study (Fig. 21).

Second, I suggest that cruise line provide cabins with a tablet to ease passengers’ communication and cooperation. The tablet does not need to include all of the features included in “market tablets”, thus could be designed and ordered according to the needs of the cruise line.
Brochure includes a comprehensive introduction about the ship and experiences. A part of the brochure is exclusively about sustainable stewardship of the cruise line in which Eco-cabin is also introduced. Passengers are kindly invited to cooperate with sustainable visions of the cruise line. In this part of the brochure, passengers can find information as well as instructions about how they can cooperate.
What to expect
Passengers become familiar with experiences as well as the layout of the ship

Reward Box
How can you receive rewards (now, during and after the journey)?
Rewarding eco-behavior in cabins is included
Rewarding participation in idea creation for cruise line is included (encouraging passengers for cooperation)

Green cruising
Information and simple reports about sustainable stewardship of the cruise line and the role of passengers in reducing the environmental footprints
Providing instructions for eco-behavior during the journey
Direct them to the reward box

Ideation
A platform for idea creation
Direct them to the reward box

Join communities
Creating communities in which passengers can join before the journey
Eco-Friends is one of them!
Cruise line has planned packages of experiences for communities

Pre-planner
Passengers create a checklist of experiences and events they would love to join

The route
Map of the route as well as information about the natural characteristics of the region

Passengers gallery
Sharing pictures and videos

Hello Ship!
Easy interaction with cruise line before the journey
A tablet is available in every cabin to facilitate communication with passengers. The tablet has only ship-related features.

Every time the user opens the application a message shows up. The passenger reports his opinion about it by clicking on one of the two faces.

Our lovely passengers helped us to reduce the consumption of our ships by 10% in two years!
THE MENU OF CABIN TABLETS IS DIFFERENT FROM CRUISE APP (BEFORE THE JOURNEY):
- EXPERIENCE PLANNER
- FEEDBACK SYSTEM
- MY CABIN
- SHIP MAP

SHARE PHOTOS | PLANNER
MY COMMUNITY | REWARD BOX
MAKE FRIENDS | IMMEDIATE FEEDBACK
SHIP MAP | MY CABIN

Day 1 Check List
Day 2 Feedback Notification on Day 1 Experiences

My Cabin Features
MY CABIN CONSUMPTION

My Cabin Consumption
my water consumption
ship's target

Would you like to join our ideation community?

After the Journey

My Cabin Features
MY CABIN CONSUMPTION

Did you try scuba diving yesterday? Did you like it?

DID YOU TRY SCUBA DIVING YESTERDAY? DID YOU LIKE IT?

AFTER THE JOURNEY

Would like to stay in touch? Would you like to join our ideation community?

no yes
7. CONCLUSION

The present thesis discusses strategies to enhance eco-behaviour in a context where UX has a fundamental role. As previously described, the main objective of this research includes finding design-strategies to engage potential passengers in environmental stewardship of cruise lines.

Due to the influence of cabins’ consumption on the overall footprints of cruise ships, facilitation of eco-behavior in cabins was chosen for the study. However, I argued that cabins are parts of a larger system of experience that is the overall experience of cruising. For this reason, my research consisted of a broader context, starting from a general understanding of cruising experience to passengers’ eco-behaviour in cabins.

The two design researches conducted in my thesis (BigPic and Eco-cabin) confirmed that potential passengers’ cooperation with environmental stewardship of the cruise lines is directly affected by the overall experience of cruising. The evidence from studies also shows that quality of experiences has a critical role in potential passengers’ eco-cooperation. Thus, I argue that facilitation of eco-behaviour must occur through pleasurable experiences. I suggest that experience designers of cruise ships use the method and findings of the first constructive design research (BigPic) as a guideline, to understand potential passengers’ general desires, preferences and concerns.

In BigPic study, as a preliminary attempt I tried to determine potential passengers’ perspective in experiencing iconic sustainability activities on board, such as DIY workshops. The study has identified that despite the interest towards the idea, potential passengers sought for “utility” in those activities. The findings of this part of the research provide insights for designers to create pleasurable experiences in accord with environmental stewardship of the industry. For further research, I suggest that cruise lines conduct similar pilot projects onboard to obtain a broader understanding of passengers’ desires and preferences for participating in iconic sustainability activities.
The second research (Eco-Cabin) has managed to obtain critical factors influencing passengers’ willingness for eco-behaviour during the journey. This provides experience designers with a framework of strategies aiming to creating facilitating condition for eco-behaviour. My thesis suggests that experience designers use the findings of Eco-cabin research in line with 4Es model (intervention of enable, engage, exemplify and encourage) to ensure the effectiveness of concepts. However, due to the newness of the concept, continuous researches for product development is of paramount importance. As for the development of concepts, this study suggested designing efficient feedback system in different stages of customers’ journey. In addition, an ideation platform was proposed aiming to facilitation co-design of ships, in which customers share their insights with experience designers. Stressing the growing importance of co-design in product developments, this thesis implicate a compelling role for co-design.

Facilitating eco-behaviour of cruise passengers requires design-strategies for communication with customers. This research obtained results proving that the image of cruise industry in terms of environmental sustainability needs to be improved. Therefore, the thesis suggests that cruise lines focus more on communication for sustainability, emphasizing companies’ environmental endeavours as well as influential role of passengers in the industry’s sustainability improvements.

A major limitation of the current study is that engaging passengers in environmental stewardship of the industry is a controversial topic, thus has not been examined by cruising companies. Despite this I believe that the thesis could be the basis for further researches. Another important limitation lies in the variety of passengers in terms socio-cultural background. It is recommended that further studies target potential passengers in different regions and socio-cultural contexts. Additionally, further work is required for communication strategies, incentive strategies and feedback system. Taken together, the findings of current research are promising and should be validated by future studies.
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**PHOTO CREDIT**


Illustrations of Design concepts used in Eco-Cabin Research
INFORMATIVE CABIN WITH REWARDS

INFORMATIVE CABIN WITH PENALTY

DAY 1

DAY 2

WHOLE TRIP

CONSUMPTION DISPLAY
CABIN - WATER / ELECTRICITY
SHIP - WATER / ELECTRICITY

TARGET LEVEL

YOUR WATER USAGE
SHIP AVERAGE

TARGET LEVEL

YOUR ELECTRICITY USAGE
SHIP AVERAGE

MONEY BACK: 5€
CONSUMPTION DISPLAY
CABIN - WATER / ELECTRICITY
SHIP - WATER / ELECTRICITY

CONSUMPTION DISPLAY
CABIN - WATER / ELECTRICITY
SHIP - WATER / ELECTRICITY

EXTRA COST: 5€
CONSUMPTION DISPLAY
CABIN - WATER / ELECTRICITY
SHIP - WATER / ELECTRICITY
INFORMATIVE CABIN / NO ECO-TIPS

INFORMATIVE CABIN / WITH ECO-TIPS

Suggestions:
- Turning the tap off whilst brushing teeth saves 12 litres of water per person a day.

Please turn the tap off while brushing your teeth.

Suggestions:
Please remember to turn the lights off when leaving the cabin.

The switch is just next to the door. Enjoy your trip!
165
Study of cruise cabin's energy and water consumption and cruiser's behaviour

Thank you for your time and participation. This study examines a number of concepts if they result in reducing the energy and water consumption in cruise cabins.

This survey consists of 3 parts:

1. In the first part, we ask some personal information to validate our study.
2. In the second part, we ask you some question regarding your personal values in terms of energy consumption.
3. In the last part, we compare the concepts in pairs and ask your opinion about them.

(We compare six different concepts in pairs by asking you two questions:
1-Which cabin type would you like to experience on a cruise ship? 2-Which cabin type reduces the energy consumption more effectively. Since your opinion is very important for us, please think about the question and briefly explain your reasons.)

Let’s start!
* Required

PART 1

Sex *
- Female
- Male

Age *
- 18-25
- 26-35
- 36-40
- 41-45
- above 45

Nationality *

Highest level of education received *
- High school graduate, diploma or equivalent
- Some college credits (less than degree)
- Trade, Technical, Vocational training
- Associate degree
- Bachelor's degree (or equivalent)
- Master's degree (or equivalent)
- Doctorate degree (or equivalent)
- Other:

Current work
If you are student and not employed, please write “student”

Have you ever experienced a cruise ship? *
- Yes
- No

If you have experienced cruising, please specify the “Date”, “Cruise line” and “Route”.

Eco-Cabin questionnaire

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**PART 2 - ECO BEHAVIOUR**

*Required*

**How concerned are you about energy and water consumption in your daily life?**

1 2 3 4 5

Very concerned 0 0 0 0 0 Not concerned at all

*Why? (Briefly explain your reason)*

---

**Do you try to reduce energy and water consumption in your daily life?**

1 2 3 4 5

Considerably 0 0 0 0 0 Not at all

*Why? (Briefly explain your reason)*

---

**Does your concern for electricity and water consumption changes while you are staying in a hotel or on a cruise ship?**

1 2 3 4 5

Remarkably changes 0 0 0 0 0 Does not change at all

*Why? (Briefly explain your reason)*

---

**PART 3 - COMPARISON**

Please read the descriptions and look at the pictures. Then answer to the questions.

Comparison of Non-informative cabin with Informative Cabin:

NON-INFORMATIVE CABIN consists of non-design considerations such as smart facilities and eco-friendly materials. This cabin type does not entail a remarkable participation of guests to reduce the energy consumption.

INFORMATIVE CABIN consists of not only eco-design considerations but also providing information to guests. Information displays show the amount of water and energy consumed in the cabin by guests. This concept aims to increase the awareness/participation of guests to reduce the energy consumption.

---

**Non-informative cabin vs Informative cabin**

---

**Which cabin type would you like to experience on a cruise ship?**

1 2 3 4 5

Non-informative Cabin 0 0 0 0 0 Informative Cabin

*Why? (Briefly explain the reason for your choice)*

---

**Which cabin type reduces the energy and water consumption more effectively?**

1 2 3 4 5

Non-informative Cabin 0 0 0 0 0 Informative Cabin

*Why? (Briefly explain the reason for your choice)*

---
PART 3 - COMPARISON

Please read the description and look at the pictures. Then answer to the questions.

Comparison of Informative Cabin "with eco-guidelines" and Informative Cabin "with rewards".

In the reward concept, cruiser will be informed about his daily energy and water consumption. The consumption info can be compared to a "Target Level" as well as the cruise average. As a result, cruiser will receive a reward if his consumption level is below the average and target level.

Informative Cabin with Eco-guidelines vs Informative Cabin with Rewards

Which cabin type would you like more to experience on a cruise ship? *

Why? (Briefly explain the reason for your choice) *

Which cabin type reduces energy and water consumption more effectively? *

Why? (Briefly explain the reason for your choice) *

Informative Cabin without Eco-guidelines vs Informative Cabin with Eco-guidelines

Which cabin type would you like more to experience on a cruise ship? *

Why? (Briefly explain the reason for your choice) *

Which cabin type reduces energy and water consumption more effectively? *

Why? (Briefly explain the reason for your choice) *
PART 3 - COMPARISON

Please read the descriptions and look at the pictures. Then answer to the questions.

Comparison of Informative Cabin with "Rewards" and Informative Cabin with "Penalty".

In the penalty concept, Cruisers will be informed about their daily energy and water consumption. The consumption info can be compared to a Target Level as well as the cruise average. As a result, the cruiser will receive penalty if his consumption level is above the average and target level.

Informative Cabin with Rewards vs Informative Cabin with Penalty

* Required

PART 3 - OVERALL COMPARISON

Please mark the cabin types according to your overall interest towards the concepts.

Most preferred = I like the most / Least preferred = I dislike the most

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<thead>
<tr>
<th></th>
<th>Non-Informative Cabin</th>
<th>Informative Cabin</th>
<th>Informative Cabin with Eco-guidelines</th>
<th>Informative Cabin with Rewards</th>
<th>Informative Cabin with Penalty</th>
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</table>

Which cabin types do you think results in the most and the least reduction of energy consumption? *

Most reduction = The concept decreases energy consumption the most / Least reduction = The concept decreases energy consumption the least

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<td>Least reduction</td>
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THANK YOU :)

We would be very glad to have your email to contact you later. If you would like to share your email with us, please write it here. Your personal information will be kept confidential.

Your notes:
If you would like to share something with us about this survey or you have any questions, please feel free and tell us. We reply! :)

Why? (Briefly explain the reason for your choice) *

Which cabin type reduces energy and water consumption more effectively? *

1 2 3 4 5
The Reward: ☐ ☐ ☐ ☐ ☐ The Penalty

Which cabin type would you like more to experience on a cruise ship? *

1 2 3 4 5
The Reward: ☐ ☐ ☐ ☐ ☐ The Penalty

Why? (Briefly explain the reason for your choice) *