Consumer behaviour in Apple’s App Store

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Abstract

Mobile applications stores such as Apple’s App Store and Google’s Android Market revolutionized the distribution of applications for mobile devices. However, with thousands of application submissions, limited testing resources and the lack of an effective filtering mechanism, application stores suffer from information overload and a risk of releasing poor quality applications that could create confusion to consumers and may seriously affect the App store markets. Thus concern has been raised whether applications have been developed according to the need and interest of consumers. Therefore, the purpose of this study was mainly to identify and get insight into the main factors that mobile application consumer takes into consideration when purchasing mobile applications from the desktop iTunes App Store and the mobile App Store on the iOS devices: iPhone, iPad and iPod Touch.

In this study both qualitative and quantitative case study approach was used. Accordingly twelve participants were selected from Stockholm and Uppsala area and their behaviour in the Apple’s App Store from the desktop iTunes and the mobile App Store on iOS devices was observed and recorded. Additionally questionnaires were administered to all participants in order to gather the necessary information.

Consumers on the App Store behave differently depending on the unit they are using. This is because applications on the App Store are presented differently in the desktop iTunes App Store and the mobile App Store on the iOS devices. The study shows that young consumers with lower income purchase apps more frequently than the consumers with higher income. It also shows that consumers often consider the description, the screenshots, and the ratings when they are interested in buying applications. Furthermore consumers take a look more on ratings in the list on the iPhone and iPad App Store because the ratings are not shown in the list on the iTunes App Store. Similarly consumers tend to read the customer reviews more on the iTunes and iPad App Store as the customer reviews on the iPhone App Store is displayed in another page. Consumers were found to be more attracted by visual elements that they are already familiarized with, apps with famous logos and known fonts and styles but also to coherent and descriptive app names and strong colors (i.e. red, green, yellow, black and blue, respectively). The majority of the participants found the iTunes App Store messy and cumbersome to use. They preferred using the iPad App Store because they found it to be a good mixture of both iTunes and iPhone App Store but also because it has more options to consider.

Although consumers behave differently depending on the unit they are using, the visual element of the apps, prior knowledge of consumers about the name of the apps, ratings, easy accessibility of screenshots and customer reviews of the apps were found to be the main factors to be considered by consumers when they visit app stores for purchase. Thus application developers and digital magazine publishers should consider these consumer behaviours in order to influence more downloads and successfully sell apps on the app stores.

Keywords: Apps, Apple’s App Store, Consumer behaviour, iPhone, iPad, iTunes.
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Introduction

This chapter describes the purpose of the research, the research questions, limitations and background of the study.

1.1 Background

In recent years the use of smartphones and computer tablets has increased dramatically and mobile applications has become the newest topic in the mobile industry. Mobile applications stores such as Apple’s App Store and Google’s Android Market revolutionized the distribution of applications for mobile devices and they have become an extremely visible and potentially profitable part of smartphone environment.

According to [Strategy Analytics, 2011] the total number of mobile applications download is set to exceed 21 billion in 2016 with a global market revenue reaching $32.6 billion. Henceforth there will be many new key players struggling for a share of both downloads and revenue.

This is mainly due to Apple’s App Store that allows developers to sell third-party applications for the iPhone, iPod Touch and iPad and allow users to download applications directly to their device or onto their computer via iTunes. Because of this, the App Store’s growth rate has been accelerating ever since it was launched in July 2008 [Gartner, 2011].

Because Apple has built in its digital distribution model through iTunes and its iOS devises such as the iPhone, iPod Touch, and the iPad they are now the key player in their field. Apple has informed registered Mac and iOS developers that the App Stores for both platforms are now available in 33 more countries. As of the latest additions, the iOS and Mac App Stores can now be accessed in 123 nations around the world [Macworld, 2011].

Driven by Apple’s success with the App Store, selling applications for its devices, other device manufacturers have opened their own stores. For instance Google opened the Android Market, which is on its way to become the second-largest application store, Research in Motion (RIM) opened App World for Blackberry users and Nokia the Ovi Store [ABI research, 2011].
1.2 Problem Description

Although application distribution has become increasingly simple due to the rise of App Stores, evaluation and research methods have to be adapted to this new context to get the best data and feedback from wide audience. In order to do that app store platform characteristics, devices, reaching target users, various usage contexts have to be dealt with.

With thousands of application submissions, limited testing resources and the lack of an effective filtering mechanism, application stores suffer from information overload. Additionally, since application stores do not have the resources to test every submission properly, they experience an increase risk of releasing poor quality applications to their customers. This is a huge problem that hinders the ability to bring useful and attractive applications to market furthermore if the consumers cannot find useful and attractive applications in the App Store they may not visit the store again.

Hence it is up to application developers to attract their consumers, by organizing content and engaging users in order to make a profit. In order to achieve this goal, the developers have to know more about the users and their behavior in these applications store.

One way to conduct a user study that has become available to the typical Human Computer Interaction (HCI) researcher is to use the application stores to publish research prototypes to a wide audience. This distribution channel can be used to conduct studies with participants from all over the world. Recently researches discovered this opportunity and began to publish research prototypes via mobile application stores to a wide audience. By doing this researchers benefits from a worldwide audience and gain access to participants with various cultural background and different context. By developing “Apps” with the aim to answer specific research questions and logging user’s behavior it is possible to harvest a large amount of data samples. For instance [Gilbertson et al., 2008] released a mobile game to gather feedback for future publications but have not published any results yet. [Pielot et al, 2010] reported that they started the evaluation of a tactile navigation system by publishing the system in the Android market.

However, a problem with these approaches is that feedback is mainly gathered to understand the nature of the respective prototype and not the actual users. But In the tradition of psychology, Human Factors and Human Computer Interaction research in contrast focus on understanding the human rather than understanding the prototype. By conducting different experiments such as quasi-experiments and observations we can study the user and their behavior in depth to derive general findings. Consequently, this study aims to identify and evaluate the variables influencing the use and purchase behavior of customers, in the Apples App Store through the desktop iTunes App Store and the mobile App Store on iOS devices, that is the iPhone, iPod Touch and iPad.
1.3 Research purpose

App discoverability is not only an issue for application developers but also for consumers. Consumers on the App Store should be able to find the app they are looking without any problem. However since there are various kinds of apps and different ways of finding them on the App Store consumers may not choose one single path to find these apps. Therefore it is important that application developers should know where and how consumers search for apps on the App Store but also which platform they use when they visit the App Store. In general application developers should understand how consumers behaves on the App Store not only on the desktop App Store but also on the mobile App Store.

The purpose of this study is mainly to identify and get insight into the main factors that mobile application consumer takes into consideration when purchasing mobile applications from the desktop iTunes App Store and the mobile App Store on the iOS devices.

In order to challenge the main research problem this study will also try to answer the following specific research questions.

1. What do users do when they visit the App Store?
2. Where do users look for apps on the App Store?
3. What obstacles do users encounter on the way to purchase application from the App Store?
4. What visual elements trigger the user on the App Store?
5. Which unit do users prefer to use to visit the App Store?

1.4 Limitations

There are many application stores in the market, selling anything from applications to media content. However due to time constraint this study only focus on the major application store Apples App Store. Moreover since the field of consumer behavior is large there are several theories and models that identify the consumer, nevertheless this study will limit itself to identifying the consumer through their consumer characteristics and the online consumer behavior buying process.
2. Theory

This chapter deals with the theories that have been done in this field of study and to identify the research gaps that the present study has attempted to address.

2.1 Online Consumer Behavior

The study of online consumer behaviour in the context of the Internet mainly focused on two key aspects of intention to return to a website and purchase intention [Koufaris 2002; Li and Zhang 2002]. To a very large degree, online consumer behaviour can be studied using basis from offline or tradition consumer behaviour. There are a number of general frameworks in consumer behaviour that capture the decision-making processes of consumers [Engel et al., 1995, Schiffman & Kanuk, 2000]. These Frameworks distinguish a number of stages typically including four sequences: need recognition, information search, evaluation of alternatives and the actual purchases. [O'Keef & McEachern, 1998] had argued that these stages are relatively abstract and do not consider the medium through which the consumer buys.

A key difference between online and offline or tradition consumer behaviour is that online consumers have to interact with technology to purchase the goods and services they need. The physical shop environment is replaced by an electronic shopping environment or by an information system (IS). This gives rise to technical issues that have traditionally been the area of information system and human computer interaction (HCI) researchers [O'Keefe et al., 2000].

Past research examining online purchase behaviour has approached the problem from several various perspectives. Drawing from technology acceptance theories, some researchers have focused on using individual beliefs such as usefulness and ease of predicting the extent to which consumers will buy online [Chen, Gillenson, & Sherell, 2002]. Others have posited and empirically confirmed that consumer attitudes towards online shopping and intention to buy online are influenced by product perceptions, the attributes of the shopping experience, customer service, and consumer risk [Jarvenpaa & Todd, 1996-1997]. Furthermore, the effects of various demographics such as income, educational level, Internet use, and Internet search, and perceptions of web vendor's sales processes on retail purchasing behaviour have been studied [Burroughs & Sabherwal, 2002].

Given these differences, research in online consumer behaviour can benefit from models and theories that have been developed in field of Human Computer Interaction. To further understand of online store use and online purchase behaviour, I will examine the contribution of important theories in more detail in the following sections.
2.2 Information-Foraging Theory

An important stage in the decision-making process is information search or information seeking and one part of theory that addresses information-seeking behaviour by individuals is information foraging theory. Information foraging theory is being developed in order to understand and improve human-information interaction. The framework assumes that humans adapt to the world by seeking and using information. Information-seeking behaviour by consumers is characterised by a trade-off, between the cost of searching and evaluating more alternative products and the benefit of a better decision when more alternatives are taken into account [Hauser & Trifts, 2000].

Today most tasks on the web include information seeking, not just textual information but also graphical information. By understanding how our visual attention and pattern perception work we can begin to develop graphical design that will help the consumers to make a better decision when more alternatives are presented to them. To achieve this goal it is important to understand the sense of visual thinking. According to [Ware, 2008] “Visual thinking consist of a series of acts of attention, driving eye movements and tuning our pattern-finding circuits” These acts of attention are called visual queries, and understanding how visual queries work can make us better designers. When we interact with an information display, such as diagram, icons, graph, or poster on the wall, we are usually trying to solve some kind of cognitive problem. In our case it is about finding an appropriate app on the App Store by looking at the different icons.

Figure 2.2 below is an application buyer’s decision progression in the iTunes App Store. The diagram is taken from [Hughes, 2010] it shows that the process starts with the visual and then goes to the textual part. According to [Hughes, 2010] most visitors on the iTunes App Store are first attracted to colourful icons.

![Figure 2.2 The decision process of a visitor on the App Store [Hughes, 2010]](image)
2.3 HCI and Usability

As described by [Olson, 2003], “Human computer interaction (HCI) is the study of how people interact with computing technology”.

The HCI-field is a multi-disciplinary research field with roots in several different disciplines including computer science, cognitive psychology, sociology, anthropology, design and ergonomics [SIGCHI, 1992]. The goal of HCI research is to understand how to design engineer more usable artifacts.

A major concept of HCI field is usability. As defined by ISO 9241 standard, part 11 [9241-11,1998], usability is defined as the

“As extended to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use” [9241-11,1998].

The importance of usability in the study of online consumer behaviour has been noted in human-computer interaction (HCI) and information systems (IS). For example, extensive research in HCI has claimed that the use of a website is influenced by its usability [Neilsen, 2000]. Both HCI and IS researchers argue that usability is a key metric for assessing a range of different systems, including online store websites [Neilsen, et.al 2000].

Existing literature for instance [Fishbein and Ajzen 1975] on information technology adoption and usage along the line of the theory of reasoned action provides sufficient empirical support that user’s positive attitude toward a technology will increase their intention to use or reuse the technology. Other research has future affirmed that these findings are also applicable to mobile technologies and services [Perdersen 2003]. Because the consumer’s attitude toward the usability of the technology and service is directly related to intention to reuse the technology and services it is significant to find out whether consumer’s attitude toward the usability of the technology and services is positive or negative.

There are many factors affecting the online consumer behaviour including usability. Usability is context dependent and will be influenced by a variety of factors. As highlighted in the ISO definition of usability, it is important to note that usability is inherently a subjective phenomenon, and its nature and assessment is highly dependent on the user’s goals. For example user may simply visit one online store website for a brief period of time and then move on to another online store website, they may spend time browsing a web site and exploring its capabilities, or they may visit the website to make a purchase.

Usability is also dependent on different context many HCI researchers are interested in modelling context-specific as opposed to general, behaviours with technological artefacts [Olson G & Olson J, 2003]. Such context dependence has been introduced to the area of consumer behaviour.
At the same time researches acknowledged that evaluative criteria differ in type, number, and importance and much like consumer behaviour in general, criteria are dependent on the consumer, the product, and the situation [Hawkins, Best, and Coney, 1995]. Hence, marketers are concerned with not only identifying the specific evaluative criteria but also the relative importance (weights) each individual consumer assigns to these criteria. Such information is also critical for information system designers, since it helps isolate specific features that different types of individuals in different situations would desire in a technological artefact.

Apart from the user's goals, the effect of usability on use behaviour and context dependent it is also important to control for other significant factors that may influence use. Prior technology use or prior experience, a reflection of a consumer's familiarity with the product, has been shown to strongly influence subsequent behaviour [Celci and Olso, 1988; Hoch and Deignto, 1989]. Normally referred to as "learning" the key notation here is that with great experience, consumers can perform product related tasks more effectively and have a richer store of prior knowledge to draw upon.

2.4 Study of User Experience in Mobile App Stores

There are many perspectives to user experience. According to [Norman & Jordan, 2003] the goal of a successful product is to engage users on behavioural, intuitive and reflective level or provide users functionality, usability, pleasure, and pride. In order to understand how to create a greater application store user experience [Strategy Analytics, 2011] has recently presented best practice guidelines for providing a superior mobile application store experience based on user evaluations of six leading mobile application stores including Android Market, Apple App Store, BlackBerry App World, Amazon Appstore, Nokia Ovi Store (UK only) and Windows Market Place. The user evaluation of Amazon Appstore showed that all participants in the study found the application store easy to navigate through, and perceived the content discovery methods useful and compelling, especially Amazon's well known recommendations, which provides a more personalized experience. However, the study showed that the lack of a confirmation step or security feature when purchasing applications was the major cause for concern. Although these user evaluations of App Store covers most of the user experience they do not consider the users behaviour or experience between the different units in the same store e.g. the user experience on the desktop App Store VS the mobile App Store.
3. Ecosystem

This chapter goes through the different actors that I have identified in the Apple ecosystem. The actors are illustrated in figure 3.1 and they are discussed in more detail below.

![Figure 3.1 The players in the Apple ecosystem](image)

3.1 Apple

This review starts with the company that started everything namely Apple. Apple was established in 1976 by Steve Jobs and Steve Wozniak. It is international corporation that designs and markets consumer electronics, computers software, and personal computers. [Business Insider, 2011]. The company's best know hardware products include the Macintosh series of computers, the iPod, the iPhone and the iPad.

Apple has been building up a very big reputation and a very strong brand. Apple is known for their product integration and it is the only computer company that creates all of its own hardware and software. Apple handles each device with care, emphasizing the little details like font choice, icon design, and thinks about how it all fits together.

Each device Apple creates plays a part in the overall ecosystem. Today Apple is the world’s most admired company [CNNMoney, 2011] and the leader of phone market in revenue [InformationWeek, 2011]. In total, Apple sold 23,24 million mobile computing products this year. The iPhone alone was responsible for $ 12.3 billion of Apple’s $24.67 billion in quarterly revenue. That is just a pinch over half of Apple’s business. Add in the iPad, and its iOS devices represent about $15 billion, or 60 %, of Apple’s earnings. This means that Apple has become the world’s largest phone vendor by revenue in January-March, overtaking Nokia for the first time ever [Retuters, 2011].

Analysts believe that the reason for these massive revenues is the so-called Halo-effect. The basic term of the Halo-effect is that consumers who buy an iPod for instance become hooked on Apples products and their ease of use, and then buy a Macintosh as their primary or secondary computer. Analysts also believe that the Halo-effect has been synonymous with Apple since 2004 and that Apple has done much to push the idea of such effect, but there has been little evidence to prove it for example survey results or consumer demographic data.
3.2 App Store

The App Store is accessible from the iTunes, iPhone, iPod Touch and the iPad via an iOS application. Below are brief description of both the desktop iTunes App Store and the mobile App Store on the iPhone and iPad.

3.2.1 iTunes App Store

The iTunes App Store is fully integrated into iTunes and functions practically the same as downloading music. Figure 3.2.1a shows a screenshot of the desktop iTunes App Store's home page. As shown in the figure users can either search or browse for iPad or iPhone apps by selecting their devices. They can search for apps using the search bar or browse the apps by selecting a category (either from the main App Store link or App Store quick link) or even browse through the lists of the top 10 apps which includes Paid apps, Free apps and Grossing apps (not shown in the figure). Users can also get a quick look at the front page and browse in the "New and Noteworthy", or "What's Hot" sections.

![Screenshot of the desktop iTunes App Store](image-url)

**Figure 3.2.1a** Screenshot of the desktop iTunes App Store
Once users click on an icon they are interested in they get to the app description page. This includes a description of the app, the developer’s name, the app price, release date, file size and some screenshots. Users can also see more apps developed by the same developer as illustrated in Figure 3.2.1b below.

Figure 3.2.1b Screenshot of the desktop App Store in iTunes

The app description page also included Customer Ratings and Customer Reviews. Moreover, users can see what other apps the customers have bought as shown in Figure 3.2.1c below.

Figure 3.2.1c Customer Rating, Customer Reviews and other apps bought by customers displayed in the iTunes App Store
### 3.2.2 iPhone App Store

The apps on the iPhone's App Store are displayed in a list with up to 5-stars ratings and price as illustrated in the left screenshot in figure 3.2.2a. Along the bottom users can find tabs for Featured, Categories, Top 25, Search and Updates. The left screenshot shows the list of Top 25 paid apps. Here users can scroll down to view 25 top apps. A similar view with different price will be displayed if users select the Top Free or Top Grossing buttons at the top. Users may also tab on one of the tabs at the bottom.

The right screenshot shows the detail view of the second app in the list “Rat On A Snow”. In the detail view users can read the description of the app and also download or purchase the app. The small white plus sign on the price indicates that the app is designed for both iPhone and iPad. Users have to scroll down to see more information in the app description page.

![Image of iPhone App Store](image)

**Figure 3.2.2a** List of top 25 paid apps and the description page in the iPhone App Store

Further down, after the text description users can see several screenshot of the app and if they scroll down even further they can find more detail information about the app such as the company or the person that developed the app, the number of ratings, the size of the app, the version and the released date. At this stage users can also tell a friend or gift the app to someone else.
What differ the iPhone App Store from the iTunes and the iPad App Store, apart from the diversity of apps is that in the description page on the iPhone App Store users have to tab on the ratings to read the Customer Reviews on the next page. Moreover the feature that allow users to see more apps developed by the same developer and see what other apps the customers have bought is missing in the iPhone App Store.

**Figure 3.2.2b** List of top 25 paid apps and the description page in the iPhone App Store

### 3.2.3 iPad App Store

Just like in the iPhone App Store the apps on the iPad App Store are displayed in a list with up to 5-stars ratings and price, however there is also additional information in the list such as category and release date. The view of the top chart in the iPad App Store is also different from the iPhone App Store. As shown in figure 3.2.3a below, both Top Free and Top Paid apps are displayed on the same page. If users scroll down they may also find the Top Grossing section and the option to display iPhone Apps.
We also see that the search tab at the bottom has been removed and been replaced by the purchased tab. Instead there is search bar on the top right corner. Finally we see that there is an additional category button at the top left corner in this case the category is set to Games. This means that the apps that are displayed are only Top Paid and Free Game apps.

When it comes to the app description page on the iPad App Store it looks almost like the iTunes App Store. As shown in the below figure 3.2.3b all the information that is displayed on the iTunes App Store is also displayed in the iPad App Store. The customer ratings and reviews are shown on the same page and if user scroll down they will also find apps that other customer have bought.

---

**Figure 3.2.3a** Top Chart list of both Free and Paid apps in the iPad App Store

<table>
<thead>
<tr>
<th>#</th>
<th>Apps Name</th>
<th>Category</th>
<th>Released Date</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hugo Retro Mania HD (D...</td>
<td>Games, Kids</td>
<td>04 November 2011</td>
<td>15.00kr</td>
</tr>
<tr>
<td>2</td>
<td>SHADOWGUN</td>
<td>Games: Action</td>
<td>09 September 2011</td>
<td>7.00kr</td>
</tr>
<tr>
<td>3</td>
<td>Tintins äventyr: Enhörnin...</td>
<td>Games: Family</td>
<td>23 October 2011</td>
<td>19.00kr</td>
</tr>
<tr>
<td>4</td>
<td>Angry Birds Seasons HD</td>
<td>Games: Action</td>
<td>21 October 2011</td>
<td>15.00kr</td>
</tr>
<tr>
<td>5</td>
<td>Contre Jour HD</td>
<td>Games: Adventure</td>
<td>25 August 2011</td>
<td>7.00kr</td>
</tr>
<tr>
<td>6</td>
<td>Bike Baron</td>
<td>Games: Action</td>
<td>09 October 2011</td>
<td>7.00kr</td>
</tr>
<tr>
<td>7</td>
<td>Kuf för barn</td>
<td>Games: Educational</td>
<td>12 August 2011</td>
<td>7.00kr</td>
</tr>
<tr>
<td>8</td>
<td>Blueprint 3D HD</td>
<td>Games: Family</td>
<td>16 November 2011</td>
<td>22.00kr</td>
</tr>
<tr>
<td>9</td>
<td>Smoody HD</td>
<td>Games: Puzzle</td>
<td>04 August 2011</td>
<td>FREE</td>
</tr>
<tr>
<td>10</td>
<td>Temple Run</td>
<td>Games: Action</td>
<td>04 August 2011</td>
<td>FREE</td>
</tr>
<tr>
<td>11</td>
<td>Pick-Up Sticks</td>
<td>Games: Board</td>
<td>23 October 2011</td>
<td>FREE</td>
</tr>
<tr>
<td>12</td>
<td>Ball Towers HD</td>
<td>Games: Puzzle</td>
<td>20 May 2011</td>
<td>FREE</td>
</tr>
<tr>
<td>13</td>
<td>Dark Dot</td>
<td>Games: Action</td>
<td>28 October 2011</td>
<td>FREE</td>
</tr>
<tr>
<td>14</td>
<td>Rail Maze Pro HD</td>
<td>Games: Puzzle</td>
<td>04 November 2011</td>
<td>FREE</td>
</tr>
<tr>
<td>15</td>
<td>Puffle Launch</td>
<td>Games: Family</td>
<td>15 September 2011</td>
<td>FREE</td>
</tr>
<tr>
<td>16</td>
<td>Snuggle Truck HD</td>
<td>Games: Racing</td>
<td>20 April 2011</td>
<td>FREE</td>
</tr>
</tbody>
</table>

---

**Figure 3.2.3b** All the information that is displayed on the iTunes App Store is also displayed in the iPad App Store.
The iPad launched in April 2010 with over 3000 applications designed for the iPad. As of July 2011, 16 months after the iPad launched, there were over 100,000 apps available at the App Store designed specifically for the device [Review Roster, 2011]

3.2.4 Apple App Store’s Growth

The App Store has exploded since its introduction in 2008 and downloads from the App Store have grown at an exponential rate. By end of 2009, the number of application available for download topped 100,000, and in January this year, Apple reached 10 billion downloads of software from the App Store, [Apple Insider, 2011].
As the App Store grows, it has required reconfiguration several times to future segment the apps into logical groups where buyers can more easily connect with sellers. Apple has improved the search capabilities of the store, added sub categories and added Top Paid Apps and Top Free Apps columns to search to each of the individual categories.

No matter what is done to improve the App Store, the challenge for developers and consumers will always be the same, the app developers concern is how to get their app noticed, while the consumers concern is how to find a good app among all the apps on the App Store.

It is clear that many iOS developers struggle at what price to sell their app. A free app can bring downloads but might not give them much profit. Another technique that app developers are using is known as the in-app purchase. This can either be used from a free app to drive sales to a selling version of apps, or developers can create add on-options into their paid apps to help drive app sale.

A report from [Distimo, 2011] suggests that in-app purchase is the way to go if you want to make money in the App Store. The report showed that freemium apps, that is, a free app to drive sales to a selling version of the apps have increased by 34% since 2010 while paid downloads only grew 7% in the same time frame. Although Distimo’s research only covered the Top 200 in each category, it is still a strong selection of the App Store’s money makers. The report also showed that it is freemium games that take up several sports, but comic apps and Magazines are also taking advantage of the freemium-pricing model.

### 3.3 Consumers

Because of the huge completion in the App Store, it is critical for the developers to understand how the consumers behave in the App Store. By understanding their behaviour they can target their market and focus on their message to the right audience. If we use the four buying decision process theory that is need recognition, information search, evaluation of alternatives and the actual purchases and apply it on the app consumers we get framework to describe the marketing place from the consumer’s perspective.

A consumer who uses the App Store has several options to search and find apps before a purchase. The consumer can either use none personal source that is, searching on different websites or use the App Store it self to find what he/she is looking for or use the personal source such as asking friends or experts.

Consumers in the App Store, can search for apps and evaluate them before purchase by read what other customers have written about the app in the customer reviews, see the ratings of the app and even see what other customers have bought.
This is a contradiction to what [Zeithaml, 2007] stated, about consumer’s evaluation of services. He stated that consumers evaluate services less than they evaluate goods before purchase. However when a consumer purchases an app from the App Store it is the service that is used during the consumption phase. After the purchase the app can be assessed whether it met the customers expected experience or not. Nevertheless since the free alternatives in the App Store are presented beside the paid apps, it is difficult to say whether consumers would actually choose to pay for the apps.

3.4 Developer

The iPhone SDK (Software Development Kit) for iPhone OS allows developers running Mac OS X on an Intel Mac to create applications using Xcode that will natively run on the iPhone, iPod Touch and iPad. Developers who publish their applications on the App Store will receive 70 % of sale revenue, and will avoid paying the distribution costs for the application. However, an annual fee is required to use the iPhone SDK and upload application to the store [Apple, Inc, 2011].

In February 2011 Apple launched a new subscription service for magazines, newspapers, videos and music. Previously, new magazine or news releases would be sold on a pre release basis. This new service allows publishers to sell their content through their apps allowing users to revive a new content over specified period of time. More interesting is that Apple will allow publishers not only to sell from iTunes where revenue will be share (70% for the publisher, 30 % for Apple), but they also allow publisher to distribute their subscriptions directly from their websites where no revenue will be share with Apple [New York-Reuters, 2011].
4. Method

This chapter describes the method used to explore the study. It also describes how I have recruited the participants, made the observations and collected the necessary data.

4.1 Research Approach

After reviewing a couple of studies in the field, I decided that the most appropriate approach for this study would be an exploratory case study. This is because the case is limited to Apple’s three units iTunes, iPhone and iPad. The study consisted of 12 participants where I observed and recorded the participant’s behavior when exploring the App Store using these three different units.

One of the main parts of any research project is either the observation or data-gathering part. Since this study is a low-constraint research I choose to use qualitative research approach to observe the initial consumer’s behavior in the App Store in all three units. I did this in order to find answers to the research questions and design a new study based on these observations. Additionally I used quantitative research to collect background information about the participants, such as frequently use of Apple’s device and the App Store.

Making detailed plans of how to gather data and analyze the data before making the observation is not essential. Instead of planning the data gathering process in detail I want to be free to change hypotheses and modify procedures during the observations. Even though case studies establish low-constraint research, the observational methods might however include highly sophisticated instrumentation.

I began the study by making my own heuristic evaluation of each App Store using some of the Nielsen’s principles for user interface design to see if there were some objective differences between them. Then I planned the study in accordance with the different steps in the human centered design processes for interactive systems (ISO 13407) and decided to have activities with participants to understand their needs and requirements of each App Store. I did this by giving the participants different tasks with scenarios.
4.2 Observation and recording methods

There are several ways of observing and recording consumer's behavior. One way to observe and record the user's behavior from the desktop iTunes App Store and from the mobile App Store on the two iOS devices is by using recording camera.

Another way to record the user's behavior and the screen activates from the iOS devices is to develop a small application, which could be used to record and store consumers behavior when they are exploring the App Store from the mobile devices or use eye tracking technology to measure the consumer's eye positions and eye movement to see where they are looking at the most in the app store. In that way we can even find out what visual elements the consumers are looking at most. However, due to my experience, time constraint and availability of hardware and software I used two different cameras to record the participants’ behavior directly when they explored the App Store from the three different units.

To record the App Store from the desktop iTunes the participants used a Windows PC, which had Morae recorder installed on it. This software was used to collect data about which links or icons the user clicked on, how long it took for the user to complete a task and event sequences for example mouse clicks, keyboard strokes etc. Furthermore the PC had a web camera, which captured the participant’s face when they performed the tasks.

Moreover I used two other cameras to record the participant’s behaviour when they used the App Store from the iOS devices. One HD camera that was aimed straight down on the iOS device, and another camcorder that was aimed at the participants face from the front. The HD camera recorded the screen activity from the iOS device while the camcorder captured the participant’s face and reaction.

4.3 Participants recruitment

To find potential participants who could participate in my study I created an event about the study and posted it on Facebook and LinkedIn. The first thirteen participants who met the qualification standards were selected for the study. The content of the form that was uploaded on Facebook and LinkedIn is available in Appendix I.

The criterion all participants had to fulfill in order to participate in the study was that they had to own at least one iOS device and have visited the App Store more than once, either from the desktop iTunes or the mobile iOS devices. Moreover the participants were asked to bring their own iPhone or iPod Touch to the study. In total I had 13 participants were one of them did the pilot test prior to the study sessions.
4.3.1 Compensation

Each participant was rewarded with an annual subscription of any choice of magazine from Bonnier Tidskrifter. The participants wrote their address and choice of magazine before the study session and the magazine they chose were later sent to the participant’s home address.

4.4 Test Plan

First I did an expert evaluation of each App Store to find major problems and to see the main difference between the desktop and iOS App Store. Then I developed a test plan according to the different steps in ISO 13407 and did a pilot tested with one of the participants prior to the test sessions. This was necessary in order to find out possible problems before the actual test began.

4.4.1 The Test Lab

The study took place in the usability lab at the Ekonomikum building of Uppsala University. The lab consists of a test room and a control room with several recording devices. The test session was conducted in the test room, where the participant performed tasks on the App Store from all the three units that is from the iTunes through the computer, from their own iPhone and iPod Touch and from the iPad that Bonnier Tidskrifter had provided me.

4.5 The test plan process

I used within subject design for this study. Each participant preformed four main tasks on the App Store from all three units. One of the tasks was a warm up task and it was always the first task on all three units. Performing the tasks on each unit took about 10 minute and after each performance on a unit a small questionnaire form was given to the participants. The participants also received a comparative questionnaire at the end of the session. This was used to enquiring the participants’ perceptions about the usage of the App Store from the respective units and find out on which unit the participants liked to use the App Store most. The whole test session took about 1 hour.

The participants were first introduced about the study and the test session. The introduction to the study can be found in Appendix II. After the introduction I gave the participant the consent form and the pre-test questionnaire, which was used to gather background information about the participants. The consent form the pre-test questionnaire can be found in Appendix III and IV. Furthermore after each performance on a unit the participants received questionnaire form about the App Store on each unit, this form can be seen in Appendix V. Finally a comparative questionnaire was given to the participants at the end of the session, this can be found in Appendix VI.
4.5.1 Scenarios and Tasks

As stated in the introduction chapter the purpose of this study is mainly to identify and get insight into what main factors the mobile application consumers takes into consideration when purchasing mobile applications from the desktop iTunes App Store and the mobile App Store on the iOS devices and also find out whether consumers behave differently on the mobile App Store on the iOS devices than the App Store in the desktop iTunes. In addition to this the study will also try to find out what visual elements that trigger the consumers on the App Store.

To achieve this goal I introduced five main tasks and subtasks to the participants to perform on the App Store on each unit. The tasks consisted of a warm up task where the participants were allowed to freely browse through the App Store and genuinely show how they use it and explain what they actually think of it. Two scenario-based tasks one concerning the search of apps and another one concerning the categories on the App Store. The final task was concerned with the visual elements on the App Store from all three units. During each performance the participants were required to think out loud. Think aloud is method used to gather data in many areas e.g. in usability testing in product design and development, in psychology and a range of other social sciences. It involves participants thinking aloud as they are performing a set of specified tasks.

All tasks in the study had a maximum time limit except the last task concerning the visual element. The warm up task was preformed during 5 minutes, where as two scenarios had to be completed before 1 and 2 minutes. If the time was up and the participant was heading in the wrong direction I showed the participant the correct way and ask them to continue with the next task. I did not have any starting point for this study because I wanted to make the study as natural as possible and make the participants comfortable.

As there are many different paths a participant can take to achieve a task I decided prior to the test that three of the tasks should be given a list of the most common possible ways the user could choose from to accomplish the task. This was intended for the two scenario-based tasks, the tasks concerning the search and categories and the sub-task concerning the navigation in the warm up task. This gave me a more clear and structured pattern when I later analyzed the data.

One problem with having the same tasks repeatedly on different devices might be that the user may remember the tasks after a while; the same problem happens when measuring navigation, the user can get familiar with the navigation after a while and therefore produce invalid data. To counter this sequence effect, the order of the tasks was randomized.

Another issue was to figure out which participant should start, from which device and in which order she should continue. To solve this problem and avoid any drawbacks of repeated measures the participants order was counterbalanced. A third of the participants started with iTunes from the computer, a third started with iPhone and a third with the iPad.
4.5.2 The warm up task

The goal of the warm up task was to get the participant feel comfortable to browse through the App Store on all three units but also to record their general behavior and find out what they are attracted to and how they find apps they like on the App Store. To accomplish this I sat with the participants and observed their behavior and asked them to show me what they normally do when they visit the App Store.

To simplify the work I also had a list of questions that I had prepare prior to the test. The questions I had prepared are listed below.

1. What is the first thing you do when you visit the App Store?
2. What kind of apps are you interested in?
3. What is the first item you look at there?
4. What is the first thing you look at in the app product page?

Although I had prepared these questions, I also asked other questions that came into my mind. For instance if the participants did something that I found interesting or seemed different from the others I asked them why they acted that way. A description of the warm up task is shown in the table below.

Table 4.5.2 Warm up

| Task goal | Record and observe general behavior in the App Store and find out how users behave when visiting the App Store from all three units. |
| Task description | Browse the App Store and show me how you normally use it. Think aloud please. |
| Scenario | Blåddra igenom App Store och visa mig vad du normalt burkar göra. Tänk högt. |
| Time limit | 5 minutes |
| Measure | Possible ways user take to find what they are looking for |

4.5.3 Navigation on the iTunes App Store

During the warm up task navigation in the App Store was also observed. However since most of the participants are used to the navigation in the iPhone App Store and the navigation on the iPad is similar to the iPhone, more observation was made on how users navigate in the iTunes App Store.

Navigation in the iTunes can be confusing, especially for first time users. One reason is because there is various different ways users can take to get to a page from the iTunes App Store. Thus I wanted to see how users navigate back to a page and also how they go back to the App Stores main page.
To make it easier for my self I decided prior to the test to list the most common path users can take to navigate on the iTunes App Store. The following two tables show the paths I have chosen users may take when navigating in the iTunes App Store.

**Table 4.5.3a** Sub-task navigation to previous page in iTunes App Store

<table>
<thead>
<tr>
<th>Task goal</th>
<th>To see how users navigate back to the previous page in the iTunes App Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description</td>
<td>Go back to the previous page.</td>
</tr>
<tr>
<td>Time limit</td>
<td>1 minute</td>
</tr>
<tr>
<td>Measure</td>
<td>Path</td>
</tr>
<tr>
<td>Possible ways</td>
<td>1. Use the small back button in the iTunes</td>
</tr>
<tr>
<td></td>
<td>2. Use the backspace button keyboard</td>
</tr>
</tbody>
</table>

**Table 4.5.3b** Sub-task navigation to main page in iTunes App Store

<table>
<thead>
<tr>
<th>Task goal</th>
<th>To see how users go back to the Apps Stores main page in the in iTunes App Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description</td>
<td>Go back to the main page.</td>
</tr>
<tr>
<td>Time limit</td>
<td>1 minute</td>
</tr>
<tr>
<td>Measure</td>
<td>Path</td>
</tr>
<tr>
<td>Possible ways</td>
<td>1. Use the top App Store link</td>
</tr>
<tr>
<td></td>
<td>2. Use the breadcrumb</td>
</tr>
</tbody>
</table>

**4.6 The scenarios**

The two scenario-based tasks were divided into two blocks called block 1 and block 2 and they were randomly used on all three units. Both blocks consisted of a task and sub-tasks.

**4.6.1 Block 1 of Scenarios (Find categories in the App Store)**

The first block was used to see how users find categories on the App Store and filter the category by their device. Since the App Store on the iTunes and iPad have both iPhone and iPad apps, participants were asked to find a category for both devices. To minimize the learning curve, I selected three different categories where each one of them was randomly used on each unit in every session. The selected categories were Lifestyle for the iTunes, News for the iPad and Games, which was used on all three units. The Games category was included on all three units because it has a sub category that may be hard to find on one device than the other.
Table 4.6a Scenario 1A App Store: Find the Lifestyle category for both iPhone and iPad.

<table>
<thead>
<tr>
<th>Task goal</th>
<th>To see if users can find the Lifestyle category for both iPhone and iPad on the iTunes App Store.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description</td>
<td>Find all Lifestyle apps first for the iPhone and then for the iPad.</td>
</tr>
<tr>
<td>Scenario 1A</td>
<td>Säg att du är intresserad av livsstil och du vill se alla livsstilsappar först till din iPhone och sedan till din iPad.</td>
</tr>
<tr>
<td>Limit time</td>
<td>1 minute</td>
</tr>
<tr>
<td>Measure</td>
<td>Path and time</td>
</tr>
</tbody>
</table>
| Possible ways | ▪ First select iPhone or iPad from the main page  
▪ Then use the “App Store” menu and click on Lifestyle  
▪ Or click on the “All Categories” drop down menu under “APP STORE QUICK LINKS” and then choose Lifestyle  
▪ Search |

Table 4.6b Scenario 1B iPad App Store: Find the News category for both iPhone and iPad.

<table>
<thead>
<tr>
<th>Task goal</th>
<th>To see if users can find the News category for both iPhone and iPad using the iPad App Store.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description</td>
<td>Find all News apps for the iPhone and iPad.</td>
</tr>
<tr>
<td>Scenario 1A</td>
<td>Säg att du är intresserad av nyhets appar och du vill se alla nyhets-appar först till din iPhone och sedan till din iPad.</td>
</tr>
<tr>
<td>Limit time</td>
<td>1 minute</td>
</tr>
<tr>
<td>Measure</td>
<td>Path and time</td>
</tr>
</tbody>
</table>
| Possible ways | ▪ First select iPhone or iPad from the main page  
▪ Then use the “App Store” menu and click on Lifestyle  
▪ Or click on the “All Categories” drop down menu under “APP STORE QUICK LINKS” and then choose Lifestyle  
▪ Search |
Table 4.6c Scenario 1C From all units: Find the sub-category puzzle on the App Store from respective units

<table>
<thead>
<tr>
<th>Task goal</th>
<th>To see if users can find the sub category puzzle from the Game category from all three units.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description</td>
<td>Find all puzzle games</td>
</tr>
<tr>
<td>Scenario 1B</td>
<td>Säg att du är intresserad av pusselspel. Hitta alla pusselspel till din enhet.</td>
</tr>
<tr>
<td>Limit time</td>
<td>1 minute</td>
</tr>
<tr>
<td>Measure</td>
<td>Path and time</td>
</tr>
<tr>
<td>Possible ways</td>
<td>▪ Coose the Category Games, ▪ Than look for the sub-category puzzle. ▪ Search for puzzle games</td>
</tr>
</tbody>
</table>

4.6.2 Block 2 of Scenarios (Search for apps in the App Store)

This second block was used to see how users search for apps in the App Store. Since there are both iPhone and iPad apps available in both iTunes and iPad App Store user can filter and sort apps using the advance search. The goal with this task was to see if the participants would use the advance search functions to filter and find apps from these two units. In order to ensure that the participants would use the advance search that is the Power Search in the iTunes App Store I asked them to find specific apps that were developed by a company. In this case in was about finding all sports apps for the iPad, which were developed by Bonnier Corporation. However to make the task a bit challenging I only told the participants to find sports apps for the iPad developed by Bonnier and not Bonnier Corporation. I choose this because I wanted to see if the participants could find all apps by a category for a specific device from a specific company and since Bonnier Corporation had many sports apps for iPad I decided to employ that.

On mobile App Store the participants were asked to find all apps developed by Bonnier Tidsskrifter. On the iPad App Store both iPhone and iPad apps are displayed thus I also asked the participants to sort the apps by their device and only show the iPad apps that were developed by Bonnier Tidsskrifrer. Once the participants found all apps developed by Bonnier Tidsskrifter, I asked their opinion about the apps in terms of design, price and content.
Table 4.6.2a Scenario 2A Find all sports apps for iPad developed by Bonnier (only from the iTunes App store)

<table>
<thead>
<tr>
<th>Task goal</th>
<th>To see if users can use the Power search in the iTunes App Store to find only sports magazine apps for the iPad, which are developed by Bonnier.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description</td>
<td>Find all sports magazine apps developed by Bonnier.</td>
</tr>
<tr>
<td>Scenario</td>
<td>Du vill veta om Bonnier har gjort några sport magazine appar till iPad. Hur skulle du göra för att hitta dessa appar?</td>
</tr>
<tr>
<td>Limit time</td>
<td>2 minutes?</td>
</tr>
<tr>
<td>Measure</td>
<td>Path, time</td>
</tr>
<tr>
<td>Possible ways</td>
<td>1. Use the Power Search and choose apps from the all results drop down menu then type in Bonnier in the Developer Name field and select sport from the Category also mark Search for show iPad Apps only.</td>
</tr>
</tbody>
</table>

Table 4.6.2b Scenario 2B Find all iPhone apps that Bonnier Tidskrifter has developed.

<table>
<thead>
<tr>
<th>Task goal</th>
<th>To see if users can find all iPhone apps from Bonnier Tidskrifter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description</td>
<td>Find all iPhone apps that Bonnier Tidskrifter has developed and show which of the apps that attract you.</td>
</tr>
<tr>
<td>Scenario</td>
<td>Du vill se vilka iPhone appar som Bonnier Tidskrifter har gjort. Hitta alla iPhone appar från Bonnier Tidskrifter och visa vilka appar som lockar dig.</td>
</tr>
<tr>
<td>Limit time</td>
<td>2 minutes</td>
</tr>
<tr>
<td>Measure</td>
<td>Path, time</td>
</tr>
<tr>
<td>Possible ways</td>
<td>1. Search for Bonnier Tidskrifter</td>
</tr>
<tr>
<td></td>
<td>2. Filter them to show only iPad apps.</td>
</tr>
</tbody>
</table>

Table 4.6.2c Scenario 2C Find all iPad apps by Bonnier Tidskrifter.

<table>
<thead>
<tr>
<th>Task goal</th>
<th>To see if users can find all iPad apps from Bonnier Tidskrifter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task description</td>
<td>Find all iPhone apps that Bonnier Tidskrifter has developed and show which of the apps that attract you.</td>
</tr>
<tr>
<td>Scenario</td>
<td>Nu är du istället intresserad av att veta vilka iPad appar som Bonnier Tidskrifter har gjort. Hitta alla iPad appar som Bonnier Tidskrifter har gjort.</td>
</tr>
<tr>
<td>Limit time</td>
<td>2 minutes</td>
</tr>
<tr>
<td>Measure</td>
<td>Path, time</td>
</tr>
<tr>
<td>Possible ways</td>
<td>1. Search for Bonnier Tidskrifter</td>
</tr>
</tbody>
</table>
4.7 Visual elements in the App Store

Since the App Store is full of visual elements such as text, lines, shapes colors and icons it is important to understand what visual elements that trigger the consumers. To achieve this goal I prepared nine quiz questions that tested the participant’s memory retention of the visual elements on the App Store. This was made by letting the participants look at a number of apps on the App Store for a very short time and immediately after that give them the nine quiz questions to find out what they remember. By using method we can obtain the visual elements that were stored in the participants short-term memory. As there are various kinds of visual elements on the App Store I only tested the most essential elements namely the icons. The quiz questions consisted of two parts and they are described as follows:

Part 1

The first part consisted of four questions where the first three questions were used to test the participant’s memory retention “what” pathway. This was used to identify an icon from a list of apps that the participants had previously seen for a very short time. The last question (Q No. 4) in this part was used to understand why the participants remembered that particular app. The four quiz questions are listed below.

1. Do you remember an app from the previous Top list? (NOT the app you just visited)
2. What was on the icon and what color did it have?
3. Where was the app located in list?
4. Why do you think you remember this app?

Since the participants may remember different visual elements from one and the same icon, it will be very difficult to analyze and assess the participant’s responds. Hence I divided the results of each memory retention quiz questions described above, in the following three groups, yes, no and partly. The following points describe where a respond from a participant should fit in.

- The answer is yes to the first question, if the participant remembers the first name of the app, and the answer is partly if the participant remembers a word from the name or a part of the name.
- The answer is yes to the second question, if the participant remembers the item that was one the icon and also remembers at least one color from the icon, and the answer is partly if the participant remembers either a color or the item on the icon.
- The answer is yes to the third question, if the participant remembers the exact position number of the app or almost the exact position, and the answer is partly if the participant remembers the location area of the app i.e. the app was located around the top area, or in the middle area.
Part 2

The second part consisted of the remaining five questions. They were used to test the participant’s memory retention what and immediacy of understanding of an application that participants recently had visited from the list. The first two questions in this part (Q No. 5 and 6) are practically the same as the first two questions in part 1. They were used to see if the participants remember the name and the visual elements of the app they visited from the Top Grossing and Top Education list. The other two questions (Q. No. 7 and 8) were used to see if participants remember the price of the app and also the compatibility of the app meaning whether it works for both iOS devices or not. The last question was used to see if the participants understand what the app they visited is about. The quiz questions are listed below.

5. What was the name of the app you just visited?
6. What icon and what color did it have?
7. How much did it cost?
8. Is the app compatible with the other iOS devices?
9. What do you think the app does? And do you remember which category it belonged to?

This task aimed to test the participant’s memory retention and not how fast they can remember an element from the App Store. Hence there was no limited time, however the participants were not allowed to spend too much time on a question, if the participants didn’t remember what they saw they were allowed to guess or write down what they think they remember. By allowing participants to freely write down whatever they remember about a question I would get more information regarding the elements they remembered.

Nevertheless there is a weakness with this approach. If participants are not remembering anything quickly they may go to the next question with out thinking too much, they might also write down very few things or detail things and forgets to write down the bigger visual elements.

To prevent this kind of threats to validity I told the participants before giving them the questions to think carefully and try to remember as much as possible regarding each quiz questions. Moreover I included two general questions in each part to understand why the participants think they remembered that particular app and what they think the app they remembered does. The quiz questions were given to the participants on each unit immediately after the participants had seen a list of apps from the Top Grossing and Top Education category. The reason why these two categories were chosen on each unit is described in the following sections.
4.7.1 Visual elements in the iTunes App Store

On the iTunes App Store the participants were asked to go to the Top Grossing section and quickly go to the app number 25. The Top Grossing section was chosen because the apps are numbered and it includes both free and paid apps.

The reason for choosing the 25th app was because there are 25 apps displayed in the Top Grossing section in the iPhone App Store and I wanted the participants to look at the same amount of apps in the iTunes App Store before they could select the app.

Since the Top apps in App Store changes all the time all participants was not seeing the same apps in the same position all the time. Once the participants entered the 25th app in the Top Grossing section I asked them to go down to the bottom of the page and point at the last app that other customers have bought and immediately after that I gave them the quiz questions. All this was used to distract the participants from remembering what they just have seen.

4.7.2 Visual elements in the iPad App Store

On the iPad App Store, on the other hand the list of free and paid apps in the Top Charts are displayed simultaneously, thus I asked half of the participants to select the 10th (the last app) from the Top Free column on the right side and the other half participants to select the other 10th (last app) from the Top paid column on the left side. Both were selected from Top Education category. I chose the Education category because there were several apps that appeared on both free and paid sides at the same time i.e. apps that had lite version and paid version and I wanted to see if the participants would remember these apps. Once participants selected the app I used the same procedure as I used in the iTunes App Store meaning I asked the participants to go to the bottom of the page and point at the last app that other customer has bought and gave them the quiz questions immediately after that.

4.7.3 Visual elements in iPhone App Store

On the iPhone App Store I asked the participants to go to the Top Grossing section and select the last 25th app. Since the App Store view is different on the iPhone I asked the participants to scroll down to the bottom of the page and say out loud the size of the app, just as they entered the app, and then immediately gave them the quiz questions.
4.8 Reliability and validity

A major concern in any research is the validity of the procedures and conclusions. The term “Validity” has several meanings and there are many types of validity, however in most cases, they all refer to the quality of precision of a study, a procedure, or measure – to “how well” each does what it is supposed to do. There are many potential threats to the validity of a research study, and therefore it is important that the researcher create procedure to eliminate or reduce them.

During my pre study I read several literature and related research on the subject in order to have a better understanding of the problem and create a good study. I also discussed about my research with experts in the area, which helped me to select relevant research questions and methods. During the actual study I tried to avoid and reduce the threats by preparing the whole study in advance and making the study as realistic as possible. I prepared the laboratory in advanced used reliable instruments and tested them beforehand. Moreover I used counterbalancing to solve potential order issues and randomized the tasks to counter the sequence effect. I also did a pilot test in order to find possible problems before the actual test began. Finally, I treated the participants well, offered them coffee so they could feel comfortable and relaxed, explained about the session in advance and tried to make the whole procedure as natural as possible.

4.9 Possible cretic

The major problem that was difficult to control in this study was the different conditions that changed constantly, particularly the order of the apps. Since the participants performed most of the tasks in the top charts sections the order of the apps may have changed at different times. This order change in the App Store may have affected the result. To avoid this I always looked for changes of the apps prior to each study session. Another state that may have been confounding is the App Store language. Both the desktop iTunes App Store and the mobile iPad App Store were set to Swedish, however participants had set English language on their iPhone App Store.

Furthermore since the participants were allowed to freely browse the App Store, e.g. in the warm up task they constantly changed from one place to another and frequently clicked at different items. This could have affected the result because it was not always the case that participants knew why they looked or clicked on a certain item. As Martin Lindstrom states in his book [Buyology, 2010] people have the tendency to say things that their actions are opposed. This is because according to Lindstrom people most of the time acts unconscious and therefore cannot tell why they behaved in a specific way. Although video recordings and think aloud method was used in this study it was still difficult to understand why participants choose to click on a certain item because sometimes participant’s behavior contradicted on what they were actually say.
5. Results

In this chapter the results from the quantitative data pre-test questionnaires (the study participants), the qualitative data from the Task analysis and post-test questionnaires (the study App Store) is presented.

5.1 Result of the Pre test-questionnaires

Primary data on participant’s basic information such as demographics, participant’s experience of using the Apples devices and the Apples App Store were collected using a pre-test questionnaire. The pre test questionnaires had three parts and they are presented as follows.

5.1.1. Participant’s demography

About 12 participants living in Stockholm and Uppsala with different professions including students were included in the study. The age of participants ranged from 20 to 47 years and their monthly income is depicted in table 5.1.1

<table>
<thead>
<tr>
<th>Participants</th>
<th>Gender</th>
<th>Age</th>
<th>Profession</th>
<th>Income after tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>20</td>
<td>Student</td>
<td>5000 - 6 999 kr</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>24</td>
<td>Student</td>
<td>7000 - 8 999 kr</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>23</td>
<td>Student</td>
<td>7000 - 8 999 kr</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>23</td>
<td>Student</td>
<td>&lt; 5000 kr</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>25</td>
<td>Student</td>
<td>&lt; 5000 kr</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>28</td>
<td>IT consult</td>
<td>50 000 ≥ 13 000 kr</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>29</td>
<td>Construction Engineer</td>
<td>50 000 ≥ 13 000 kr</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>38</td>
<td>Accounting assistant</td>
<td>50 000 ≥ 13 000 kr</td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>26</td>
<td>Civil Engineer</td>
<td>50 000 ≥ 13 000 kr</td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>47</td>
<td>PhD in Language</td>
<td>50 000 ≥ 13 000 kr</td>
</tr>
<tr>
<td>11</td>
<td>M</td>
<td>25</td>
<td>Lawyer</td>
<td>50 000 ≥ 13 000 kr</td>
</tr>
<tr>
<td>12</td>
<td>M</td>
<td>29</td>
<td>Programmer</td>
<td>50 000 ≥ 13 000 kr</td>
</tr>
</tbody>
</table>

Table 5.1.1. Demographic characteristics of the study participants, Uppsala, Fall2011
### 5.1.1a Summary of consumer demographics

#### Table 5.1.1a A summary of consumer demographics factors

<table>
<thead>
<tr>
<th>Factory Type</th>
<th>Individual Factors</th>
<th>The study Participants</th>
<th>Major Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>The participants consisted of eleven men and one female.</td>
<td></td>
<td>The female participant had never purchased an app from the App Store before and she was also the only one who did not download games from the App Store.</td>
</tr>
<tr>
<td>Age</td>
<td>The participant’s age range was 20–47 years old. Median (25)</td>
<td></td>
<td>The younger participants had more experience of using the App Store from both iTunes and iPad, they were also more willing to pay for an app than the older participants.</td>
</tr>
<tr>
<td>Profession</td>
<td>The participants consisted of five students and other educated professions i.e. Programmer</td>
<td></td>
<td>The majority of the student had a good experience of using the App Store from both iTunes and iPad. Two of the students also owned an iPad. Most of the students also purchased apps from the App Store.</td>
</tr>
<tr>
<td>Income</td>
<td>The students had an income between 5000–8999 kr after tax whereas the rest had an income of 50 000 ≥ 13 000 kr</td>
<td></td>
<td>The income did not affect the buying tendency of apps on the App Store. Most of the participants who purchased apps on the App Store were students and had an income between 5000-8999 kr</td>
</tr>
</tbody>
</table>
### 5.1.2. Participants usage of the iOS devices

#### Table 5.1.2.1 Participants experience for iOS devices (iPhone, iPod Touch, iPad and Android Smartphone and Tablet).

<table>
<thead>
<tr>
<th>#</th>
<th>iPhone (Pod Touch)</th>
<th>Have had the device for</th>
<th>Time spent on the device per day</th>
<th>Have used and iPad</th>
<th>Have used Android Phone/tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>iPod Touch, 2 years, both devices</td>
<td>30 min – 3h(iPod Touch)</td>
<td>Yes, have used it 7-10 times</td>
<td>Yes, own an Android Phone</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>iPhone 3GS 1,5 years</td>
<td>30 min – 3 h</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>iPhone 4, 5 month (iPhone) &amp; 7 month (iPad)</td>
<td>4 – 7 h (iPhone), 30 min - 3h(iPad)</td>
<td>Yes, owns an iPad</td>
<td>Yes, have used an Android Phone (2-6 times)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>iPhone 3GS 2 years</td>
<td>&gt;7 h</td>
<td>Yes, have used it 2-6 times</td>
<td>Yes, have used an Android Phone (2-6 times)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>iPhone 3G, 2 years (iPhone), 8 month (iPad)</td>
<td>4 – 7 h (iPhone), 30 min - 3h(iPad)</td>
<td>Yes, owns an iPad</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>iPhone 3 years</td>
<td>&lt; 30 min</td>
<td>Yes, have used it one time</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>iPhone 4 1 year</td>
<td>&gt;7 h (iPhone)</td>
<td>Yes, have used it 2-6 times</td>
<td>Yes, owned Android tablet (for 6 month)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>iPhone 4 7 month</td>
<td>&gt;7 h</td>
<td>Yes, have used it 2-6 times</td>
<td>Yes, have used an Android Phone (2-6 times)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>iPhone 3G 3 years</td>
<td>4 – 7 h</td>
<td>Yes, have used it one time</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>iPhone 4 6 month</td>
<td>4 – 7 h</td>
<td>Yes, have used it one time</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>iPhone 3G 2 years</td>
<td>4 – 7 h</td>
<td>No</td>
<td>Yes, Have used an Android Phone (2-6 times)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>iPhone 4 6 month</td>
<td>4 – 7 h</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Among the participants, eleven of them have had iPhone of different models i.e. five of them had iPhone 4, the other five had iPhone 3GS and one participant had the earliest model. Only one participant had iPod touch however, this participant has performed the task that was set for iPhone App Store. There were also two participants in the study who owned an iPad (Table 5.1.2.1). Regarding participants experience for Android Phone or tablet, almost half of the participants have been using the phone including the Android smartphone except
one who used it before. Still more than half of the participants have the experience of using iPad though it was for short period (not for more than 10 minutes) see table 5.1.2.1

**What did the participants use their iOS devices for?**

Most of the participants used their phone device primarily to call or send SMS/MMS depends up on the type of the device they are using. For instance, the participant who used the iPod Touch was not included in this group since he cannot call or send SMS directly from an iPod touch (Table 5.1.2.2)

According to participants response illustrated in Table 5.1.2.3, four of the participants primarily used the iPad for surfing the web with Safari and the same number of participants also used the device to play games as a second priority. However, most of the participants did not download applications as frequently as other activities by iPAD users and only three participants considered downloading applications using iPAD as their fifth priority. The stars in table 5.1.2.3 indicate the two owners of the iPAD.

**Table 5.1.2.2** List of Participant’s priority usage of the iPhone in rank.

<table>
<thead>
<tr>
<th>iPhone usage</th>
<th>1st Priority</th>
<th>2nd Priority</th>
<th>3rd Priority</th>
<th>4th Priority</th>
<th>5th Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call/SMS/MMS</td>
<td>8</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>E-mail</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Search information</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Play games</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Listen to music</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Watch video clips</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Download apps</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

**Table 5.1.2.3** List of Participant’s priority usage of the iPad in rank

<table>
<thead>
<tr>
<th>iPad usage</th>
<th>1st Priority</th>
<th>2nd Priority</th>
<th>3rd Priority</th>
<th>4th Priority</th>
<th>5th Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read news/magazines</td>
<td>2(**)</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Played games</td>
<td>1</td>
<td>4(<strong>)(</strong>*))</td>
<td>3</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Watched video clips</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3(***))</td>
<td>2(**)</td>
</tr>
<tr>
<td>Surfed the web with Safari</td>
<td>4(***))</td>
<td>2</td>
<td>-</td>
<td>2(***))</td>
<td>1</td>
</tr>
<tr>
<td>Downloaded apps</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3(***))</td>
</tr>
<tr>
<td>Listened to music</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E-mail</td>
<td>1</td>
<td>-</td>
<td>3(<strong>)(</strong>*))</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
<td><strong>9</strong></td>
<td><strong>9</strong></td>
<td><strong>9</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

**Notes:**
- **(** The first participant who owned an iPad
- **(** The second participant who owned an iPad
How many apps have the participants downloaded on their device?

Participants were asked whether they have downloaded applications on their device and whether the applications are for paid or free of charge. All participants downloaded free applications and the number of free applications downloaded were relatively larger compared to paid applications. Even some participants who downloaded the maximum number of free applications did not download a single of paid applications (see table 5.1.2.4).

Table 5.1.2.4 Number of free and paid Apps downloaded into participant’s iOS device

<table>
<thead>
<tr>
<th>Participants</th>
<th>Number of free apps</th>
<th>Number of paid apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21 – 50</td>
<td>1 – 5</td>
</tr>
<tr>
<td>2</td>
<td>21 – 50</td>
<td>1 – 5</td>
</tr>
<tr>
<td>3</td>
<td>&gt;100 (iPhone &amp; iPad)</td>
<td>&gt;10 (iPhone &amp; iPad)</td>
</tr>
<tr>
<td>4</td>
<td>81 – 100</td>
<td>&gt;10</td>
</tr>
<tr>
<td>5</td>
<td>21 – 50 (iPhone &amp; iPad)</td>
<td>1 – 5, (iPad 6 - 10)</td>
</tr>
<tr>
<td>6</td>
<td>21 – 50</td>
<td>None</td>
</tr>
<tr>
<td>7</td>
<td>&gt;100</td>
<td>None</td>
</tr>
<tr>
<td>8</td>
<td>21 – 50</td>
<td>6 – 10</td>
</tr>
<tr>
<td>9</td>
<td>51 – 80</td>
<td>&gt;10</td>
</tr>
<tr>
<td>10</td>
<td>20 &gt;</td>
<td>None</td>
</tr>
<tr>
<td>11</td>
<td>21 – 50</td>
<td>&gt;10</td>
</tr>
<tr>
<td>12</td>
<td>51 – 80</td>
<td>6 – 10</td>
</tr>
</tbody>
</table>

5.1.3. Participant’s frequency of visit and usage of the App store.

The last part in this section was used to find out how often the participants visit the App Store and from which device they visit it. It was also used to find what they do when they visit the App Store.

Most of the participants visit the iPhone App Store seldom. One participant who has the earliest version of iPhone has never visited the App Store from his iPhone; because the iPhone does not have a 3G network. However this participant uses iTunes to download and sync apps into his iPhone. Half of the participants have never used the iTunes App Store and the other half used it only few times. Only three participants have visited the iPad App Store two of these were the owners of the iPads (see table 5.1.3.1).
Table 5.1.3.1 Frequency of visits of participants on the App store from the iOS devices and the desktop iTunes.

<table>
<thead>
<tr>
<th>Frequency of visit of App Store</th>
<th># Of Participants who used iPhone/iPod Touch</th>
<th># Of Participants who used the iPad</th>
<th># Of Participants who used iTunes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Seldom</td>
<td>8</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Every other day</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Once a day</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Several times a day</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Few times</td>
<td>-</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Very few times</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 5.1.3.2 Participant’s usage of the App Store from the iPhone in rank

<table>
<thead>
<tr>
<th>Usage of App Store From iPhone</th>
<th>1st Priority</th>
<th>2nd Priority</th>
<th>3rd Priority</th>
<th>4th Priority</th>
<th>5th Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browse Top Charts</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Browse by Category</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Browse by Feature</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Search for apps</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Purchase apps</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Download free apps</td>
<td>-</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Read app description</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>

Eight of the participants used the App Store to primarily browse through the Top Charts. Secondly five participants used the App Store to download free apps. Since the participant with the first iPhone had never visited the App Store from his iPhone, he was not included in this table.

The next table 5.1.3.3 shows which of the seven participants how have used an iPad also have visited the App Store. Since the two participants who owned an iPad had visited the App Store more then the other they are not included in the table.
Table 5.1.3.3 Participant’s usage of the App Store from the iPad in rank

<table>
<thead>
<tr>
<th>Usage of App Store from the iPad</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Priority</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Priority</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Priority</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; Priority</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browsed Top Charts</td>
<td>4(<strong>)(</strong>*)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Browsed by Category</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Browsed by Feature</td>
<td>-</td>
<td>-</td>
<td>2(<strong>)(</strong>*)</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Searched for apps</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2(<strong>)(</strong>*)</td>
<td>1</td>
</tr>
<tr>
<td>Purchased apps</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Downloaded free apps</td>
<td>-</td>
<td>2(<strong>)(</strong>*)</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Read app description</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

** The first participant who owned an iPad  
*** The second participant who owned an iPad

As can be seen from the table above all four participants used the iPad App Store primarily to browse the Top Charts. Moreover, both participants who owned the iPad used the App Store in the same way. The next table 5.1.3.4 shows what the six participants who had visited the App Store from the iTunes did.

Table 5.1.3.4 Participant’s usage of the App Store from the iTunes in rank

<table>
<thead>
<tr>
<th>Usage of App Store in iTunes</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Priority</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Priority</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Priority</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; Priority</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browsed Top Charts</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Browse by Category</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Browsed by Feature</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Search for apps</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Purchase apps</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Download free apps</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Read app description</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Half of these six participants used the iTunes App Store to primarily search for apps or download free apps. The final table 5.1.3.5 shows the number of the participants who have visited Google’s Android Market and from which unite they visited it from.

Table 5.1.3.5 Number of participant who used the Google’s Android Market

<table>
<thead>
<tr>
<th>Visited Google’s Android Market</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>7</td>
</tr>
<tr>
<td>Yes, from an Android Phone</td>
<td>3</td>
</tr>
<tr>
<td>Yes, both from the webb and Android Phone</td>
<td>1</td>
</tr>
<tr>
<td>Yes, both from Android Phone &amp; Andorid Tablet</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
</tr>
</tbody>
</table>
5.1.3a Summary of consumer’s prior experience of the App store.

Table 5.1.3a A summary of consumer’s prior experience and usage of the App Store

<table>
<thead>
<tr>
<th>Factory Type</th>
<th>Individual Factors</th>
<th>The study Participants</th>
<th>Major Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>App Store Experience</td>
<td>Frequency of visit on iPhone App Store</td>
<td>All participants except one had used the iPhone App Store before.</td>
<td>Most of the participants visited the iPhone App Store seldom and they used it mainly to search for apps.</td>
</tr>
<tr>
<td></td>
<td>Frequency of visit on iPad App Store</td>
<td>4 out of 9 participants had used the iPad App Store before including the two participants who owned an iPad.</td>
<td>The owners of the iPad and the participants who had most experience of the iPad App Store succeeded with the tasks that were given to them.</td>
</tr>
<tr>
<td></td>
<td>Frequency of visit on iTunes App Store</td>
<td>Six participants had used the iTunes App Store before.</td>
<td>The participants who had never used the iTunes App Store failed the tasks that were given to them.</td>
</tr>
</tbody>
</table>

5.2 Result of task analysis

The aim of using the pre-test questionnaire information about participant’s prior experience for the Apple devices and App Store was presented in the previous section. The tasks given to all participants and their outcomes were recorded in video and the analyses of the results are presented in this section.

Before presenting the results there is an important factor that I would like to point out that is the participants prior knowledge about using the App Store. As we saw in the previous section half of the participants never used the desktop iTunes App Store, thus I thought it would be interesting to see how long it would take for the participants to actually open the App Store from the desktop iTunes.

It turned out that opening the App Store from the iTunes on a computer was much more difficult than I thought. Several participants, especially those who had never used it before had hard time getting to the App Store from the iTunes App Store. Three of these participants struggled to open the App Store from the iTunes all because they didn’t know where to click. After having successfully entered the iTunes, these three participants spent more than 15 seconds looking for the App Store link without doing anything. All three participants looked for the App Store link in the left column menu of iTunes.
An interesting notation was that one of these participants had actually used the App Store before, but for very short time. The time distribution among all participants is shown in figure below.

![Time distribution](image)

**Table 5.2.** Time taken by the participants to open the App Store in the iTunes

### 5.2.1 Result from the warm up task

The task analysis phase started with a warm up task in all units. The participants were asked the questions that were described in the warm up task section in the method part. All warm up tasks began with asking the participants to show and tell the first thing they do when they visit the App Store.

#### 5.2.1.2 What is the first thing users do when they visit the App Store?

People visit the App Store to either browse or search for a specific type of app. They might also visit the App Store to update their existing apps. In order to find out what type of user these participants are, they were asked to show and state what they do in first hand when they visit the App Store. The same question was given to the participants in the pre-test questionnaires the results can be found in table 5.1.3.2 – 5.1.3.4. In this part however they were asked to show live the first thing they do when they visit the App Store from the three units. Table 5.2.1.2 below shows the first thing that participants did when they visited the App Store from all three units.
Table 5.2.1.2 The first thing participants’ did when they visited the App Store

<table>
<thead>
<tr>
<th>Show the first thing you do when you visit the App Store</th>
<th>iTunes</th>
<th>iPhone</th>
<th>iPad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Looked at the New and Noteworthy section</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Looked at the what’s hot section on the first page</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Searched for an app in first hand</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checked the top front slideshow on the first page</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looked at App of the week on the first page</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looked at the Top Charts/Top 25</td>
<td>1</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Looked at Category Update</td>
<td>-</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

The overall result shows that more than half of the participants first looked at the apps in the “New and Noteworthy” and “What’s Hot” section in the iTunes App Stores. Five participants searched on the iPhone App Store and nine participants looked at the Top Chart on the iPad App Store.

5.2.1.3. What is the first item users look at on the App Store before going to the app description page?

Next, in order to see which visual elements the participants are attracted to before going to the app description page they were asked to show and explain which items they would look at first and second on the App Store from all three units.

On the iTunes App Store the participants demonstrated this task on the apps from the “New and Noteworthy” and “What’s Hot” section whereas on the iPad and iPhone App Store participants demonstrated on the apps from the Top Chart section. Table 5.2.1.3 shows that all participants looked at the icons in first hand in all three units and the name of the app in second hand from the iTunes App Store.

From the iPad on the other hand only half of the participants looked at the name in the second hand the other half looked at ratings. Seven participants in the second hand also looked at the ratings from the iPhone App Store.

Table 5.2.1.3 Participants first and second look at on the App Store.

<table>
<thead>
<tr>
<th>App Store</th>
<th>First look</th>
<th>Second look</th>
</tr>
</thead>
<tbody>
<tr>
<td>iTunes</td>
<td>Icon(12)</td>
<td>Name(12)</td>
</tr>
<tr>
<td>iPhone</td>
<td>Icon(12)</td>
<td>Name(5), Ratings(7)</td>
</tr>
<tr>
<td>iPad</td>
<td>Icon(12)</td>
<td>Name(6), Ratings(6)</td>
</tr>
</tbody>
</table>
5.2.1.4 What is the first thing users look at in the app description page?

The overall result shows that when participants visited the app product page they were more drawn to the graphics on the iTunes and iPad App store. Table 5.2.1.4 shows that half of the participants on the iTunes App Store looked at screenshots first and only three participants looked at the Screenshots in the iPad App Store. None of the participants looked at the screenshots in the iPhone App Store in first hand. In the second place we see that participants on the iTunes and iPad App Store looked at the ratings whereas no participants looked at the ratings in the iPhone App Stores.

Table 5.2.1.4 Participants first and second hand look in the app description page.

<table>
<thead>
<tr>
<th>App Store</th>
<th>First look</th>
<th>Second look</th>
</tr>
</thead>
<tbody>
<tr>
<td>iTunes</td>
<td>Description(6), Screenshots(6)</td>
<td>Screenshots(6), Ratings(6)</td>
</tr>
<tr>
<td>iPhone</td>
<td>Description(10), Free button(2)</td>
<td>Screenshots(10)</td>
</tr>
<tr>
<td>iPad</td>
<td>Description(9), Screenshots(3)</td>
<td>Screenshots(9), Ratings(3)</td>
</tr>
</tbody>
</table>

5.2.1.5 How do users navigation on the iTunes App Store

During the warm up tasks navigation in the App Store was also observed especially the navigation in the desktop iTunes App Store. This is because there are various paths that users can take to navigate back and forward to a page in the iTunes App Store. Hence I have observed the most common path users take to navigate in iTunes App Store. After analysis of the various paths that the participants take to go back to a page, and the home page I found that there are typically two paths users take to navigate back to a page and another two different path to go back to the home page. The paths are described as follows:

To navigate back to a page on the iTunes App Store 11 participants used the small triangle back button in the iTunes whereas one participant used the backspace button keyboard. An interesting observation made was that four participants had trouble finding the back button in the iTunes App Store at first. One of them tried to use the iTunes music back button as shown in the left picture in figure 5.2.1.6 and two participants tried to click on the iTunes Store link to go back as shown in right picture in figure 5.2.1.6 The last participant who had trouble finding the back button in iTunes App Store used the backspace on the keyboard to navigate back. Although this participant used the iTunes App Store before he spent more than 20 seconds finding a way to go back to a page before he decided to use the backspace button on the keyboard.
To go back to iTunes App Store home page from an app product page ten participants used the top App Store link while two participants used the breadcrumb as illustrated in figure 5.2.1.7 below.

5.2.1.8 What kind of apps are the users interested in?

Since there was no question about what kind of apps the participants might be interested in in the pre-test questionnaires they were asked during the warm up task. Ten of twelve participants were in interested in games from the App Store. Two of these participants were the owners of the iPod Touch and the iPhone original. Since their devices are limited compared to the other devices versions, they used their devices to mainly downloaded games. Productivity, utility, social networking, fitness and health care and weather apps were also popular among the participants.

5.2.2 Result from the task scenarios

The result from the two scenario-based task is presented below. As stated in the method chapter these scenario-based tasks are concerned with finding categories and searching on the App Store.
5.2.2.1 Block 1 of Scenarios: (Participant’s attempt to find categories in App Store)

This section was used to see how users find categories on the App Store and filter the categories by their device. Because user can look for both iPhone and iPad apps and take different ways to find a category for both devices from both iTunes and iPad App Store participants were divided into three groups to see which way they take to find a categories for both iOS devices using the iTunes and iPad App Store. The first group consisted of four participants and they were asked to find a category for the iPhone from both units.

The second group consisted of another four participants who were asked to find a category for the iPad from both iTunes and iPad App Store. The last four participants were asked to find a sub-category from all three units. Since the goal of this task was to see which path the participants take to find a category I did not focus that much on the time and because there was no starting point for each task, the performance time may vary from one participant to another. However there was a limit time for each task and if the participants were not finished within the given time the task was considered as failed.

Scenario 1A.Finding category for the iPhone from both iTunes and iPad App Store

- **Specific concern:** To see which way the users take to find the Lifestyle category for the iPhone from the iTunes and the Top News category for the iPhone from the iPad App Store.
- **Task:** Find the Lifestyle, and Top News category for the iPhone.
- **Time Limit 1 minute**
- **Median time for the iTunes:** 15s (13s, 18s)
- **Median time for the iPad:** 56s (.53s, 62s)

![Figure 5.2.2.1b Scenario 1A](chart.png)
As can be seen from the above figure all four participants in the first group succeeded to find the lifestyle category for the iPhone from the iTunes App Store. Three of these participants used the main App Store Menu link and one participant used the App Store Quick links drop down menu. From the iPad App Store only three participants managed to find the Top News category apps for the iPhone. Two of them took the path through the top chart, chose the category news for from there and finally taped on the Show iPhone Apps tab at the bottom of the page, one of them actually went to the category section first but when he realized there was no way to sort the apps by their devices he went to the top chart and found the category from there. The last participant who succeeded finding the iPhone Top News Category searched for News and filtered the iPhone apps from there; however he had problem sorting the apps by their popularity or (showing the top apps), this is all because the participant had difficult time to find the sort by option button. One participant failed trying to find the top news iPhone apps in the category section.

**Scenario 1B Finding category for the iPad from both iTunes and iPad App Store**

- **Specific concern:** To see how users find the category Lifestyle for the iPad from the iTunes App Store and the News category for the iPad from the iPad App Store
- **Task:** Find the lifestyle and news category for the iPad.
- **Time Limit 1 minute**
- **Median time iTunes:** 42s (29s, 63s)
- **Median time iPad:** 39s (31s, 51s)

![Figure 5.2.2.1b Scenario 1B](image)

The participants found it harder to find the Lifestyle category for the iPad from the iTunes App Store; this was because the participants didn't set the option to iPad at the beginning. Nevertheless three participants succeeded whereas one participant failed. Two of the participants who succeeded used the Main App Store link whereas one of them used the App Store Quick link drop down.
The participant who failed did not find the lifestyle category for the iPad, because this participant didn't know how to set the option to iPad first. However the participant found the category for the iPhone from the App Store Quick links drop down menu. This participant had never used the iTunes App Store before.

Finding the Top news category for the iPad from the iPad App Store was no problem for the participants. All four of them succeeded finding the category; three of them used the category section by tapping on the category tab at the bottom and then selected news and finally sorted the apps by their popularity. The other participant searches for news and sorted the top news from there. All three participants who took the path through the category were confused about the apps displayed there. They didn’t understand that each icon belonged to a particular category and that they had to tap on it to get to that category.

*Scenario 1C Find a game sub-category from the App Store using all three units.*

- **Specific concern:** To see how users find the sub-category puzzle for the iPhone using all three units.
- **Task:** Find the sub-category puzzle
- **Limited time** 1 minute
- **Median time iTunes:** 72s (67s, 76s)
- **Median time iPad:** 92s (82s, 109s)
- **Median time iPhone:** 28s (21s, 37s)

<table>
<thead>
<tr>
<th>Participants</th>
<th>Succeeded</th>
<th>Failed</th>
</tr>
</thead>
<tbody>
<tr>
<td>iTunes: Top App Store Menu</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>iTunes: Search</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>iPad: Category Tab</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>iPad: Search</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 5.2.2.1c Scenario 1C*

Finding a sub-category was much more difficult to find on the iTunes and iPad App Store. As can be seen from the figure above all participants failed to find the puzzle sub category from the iTunes and iPad App Store whereas all participants succeeded with the task from the iPhone App Store. Almost all participants who used the iPad App Store failed trying to find the puzzle sub category in the category section. One participant tried to search for puzzle after having spent more than one minute searching for it in the category section. On the iTunes App
Store three participants actually managed to find the puzzle sub-category but unfortunately exceeded the time limit. Two of them used the Top App Store Menu whereas one used the App Store Quick links drop down. The last participant failed searching for puzzle games.

5.2.2.2 Block 2 of scenarios (Participant’s attempt to search for apps in App Store)

This section was used to see how users search for apps in the App Store. The first scenario was used to see if users would use the Power Search in the iTunes App Store to find specific apps. The second and the last scenario was used to see if users can find apps developed by Bonnier Tidskrifter for both iPhone and iPad using the two iOS devices. It was also used to see which of the Bonnier Tidskrifter apps that attracted the participants.

Scenario 2A Find all sports magazine apps for the iPad developed by Bonnier

- **Specific concern:** To see if users can use the iTunes Power search function to find all iPad sports magazine apps which are developed by Bonnier
- **Task:** Find all iPad sports magazine apps developed by Bonnier
- **Median time:** 72s (67s, 76s)

![Figure 5.2.2.2a Scenario 2A](chart)

As we can see from the above figure all participants failed this task. Eleven participants failed the task searching for the apps in the standard search. Nine of these participants searched for Bonnier in first place and two participants searched for Bonnier sports and one participant tried to go through the sport category from the App Store Quick Links and find the apps from there. Eight of the participants who searched for Bonnier clicked on the Bonnier Corporation link and showed all the iPad Apps by Bonnier Corporation.
Then they pointed at the sports app and said they have found them. However even though there was the big title saying “iPad Apps By Bonnier Corporation” all participants were not sure whether all the apps were really from Bonnier Corporation. This was because the developer name was not shown under the icon.

Although the participants managed to find most of the sports apps for the iPad developed by Bonnier Corporation there were still other apps from other categories in the list. None of the participants could filter the apps when they were asked but able to show only the sports apps from the list.

After I pointed out that they could use the Power search to filter apps, I tried to see if they could actually use the Power Search to filter the apps and only show the sport iPad apps that. It turned out that many of the participants had difficulties in using the Power search especially novice once.

The first common mistake all participants did was forgetting to choose Apps from the drop down menu below the Power Search as illustrated in figure 5.2.2.2a1. Five participants started their search by typing in Bonnier in the title field whereas the other three typed Bonnier in the artist field, when they pressed enter they were presented with a list of songs, albums and movies contain the keyword Bonnier as a result. What these participants didn’t know was that the Power Search searches for everything in the iTunes including music and movies and other things unless you specify your choose at the beginning as shown in the figure below

![Figure 5.2.2.2a1 The Power Search in iTunes](image)

Another problem that all participants faced was not being able to show the apps only for the iPad in the Power Search. This was because they didn’t select the Search only for iPad Apps option as illustrated in figure 5.2.2.2a2. All participants choose iPad from the Device Compatibility option and assumed that it was enough to show all iPad apps, which in this case were not. The Device Compatibility option is only used for showing apps that are compatible with each other devices.

![Figure 5.2.2.2a2 Show iPad Apps only in the Power Search The Power Search in iTunes](image)
Scenario 2B Find all iPhone apps developed by Bonnier Tidskrifter

- Specific concern: To see if users can find iPhone apps from Bonnier Tidskrifter and to see which of the apps that attract user’s attention.
- Task: Find all iPhone apps that Bonnier Tidskrifter has developed and show which of the apps that attract you.

NOTE: No time is taken for this task since the task is only focusing on the participant’s choice of app from Bonnier Tidskrifter in the iPhone App Store.

When searching for Bonnier Tidskrifter in the iPhone App Store you get two search results, bonnier tidskrifter and bonnier tidskrifter ab as illustrated in the left screenshot in figure 5.2.2.2b

From this search result eight participants choose the first option bonnier tidskrifter. Six of them were drawn to the second app Krysset because they thought Krysset was the most coherent and descriptive app of them all, they explained that one could immediately understand from the name and the icon what the app does. Since two of these participants were also interested in puzzle they willing to download it and maybe buy it if it doesn’t cost much. Two participants were drawn to the first app VinVin because they both thought they had recently downloaded that app. For participants accidentally choose the second option Bonnier Tidskrifter AB and ended up viewing only the two apps from Bonnier Tidskrifter AB, Teknikens Värld – Bilnyheter and Dagens Sanakis. All four participants choose to look at Dagens Snakis at first, because they were
drawn to the apps high ratings, nevertheless when they found out what the app was really about three of them changed to Teknikens Värld – Bilnheter because they were not interested in gossip. The participant who remained in the Dagens Snakis app was a female and she explained that she liked the app because of its distinctive icon but also because she was more interested in gossip rather than technique. Yet, she didn’t think she would download the app.

All three participants who switched to the app Teknikens Värld – Bilnheter were interested in technique and were therefore drawn to that app because of the first word technique, however they doubted when they saw the two cars on the icon because none of them were interested in cars, thus they were not interested in downloading the app.

**Scenario 2C Find all iPad apps developed by Bonnier Tidskrifter**

- **Specific concern:** To see if users can find iPad apps from Bonnier Tidskrifter and find out which apps that attract users’ attention.
- **Task:** Find all iPad apps that Bonnier Tidskrifter has developed and show which of the apps that attract you.

**NOTE:** There was no time limitation for this task either since the task is only focusing on the participant’s choice of app from Bonnier Tidsktifter in the iPad App Store

When participants searching for bonnier tidskrifter on the iPad they got the six apps that are illustrated in figure 5.2.2.2c.

![iPad Apps](image-url)

**Figure 5.2.2.2c** Searching for Bonnier Tidskrifter on the iPad

Among these apps the participants found Allt om mat, Krysset and Illustrerad Vetenskap to be the most attractive apps. Five participants found the app Allt om mat to be attractive, one of them said it was because of it’s large font on the word mat and it’s shiny shading.
Four participants were drawn to the app Illustrerar Vetenskap because they recognized it from the print magazine; one of them indicated that it has the same font as the print magazine. Two of the participants who were attracted in the app Krysset on the iPhone App Store were also attracted to it on the iPad App Store; one of them even liked it more on the iPad. One participant liked the app Sköna hem; he thought it had an attractive pattern and color.

The participants were also asked whether they would buy or subscribe to the magazine app they have chosen to be attractive. Table 5.2.2c1 shows how the participants responded to this question.

<table>
<thead>
<tr>
<th>Magazines</th>
<th>Subscription</th>
<th>Yes</th>
<th>No</th>
<th>Maybe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustrerad Vetenskap</td>
<td>Yes</td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Allt om mat</td>
<td>Yes</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sköna hem</td>
<td>Yes</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As we can see the majority of the participants responded maybe. Most of them said maybe because they thought the price were a bit expensive especially those who picked Illustrerad Vetenskap which cost 56kr for each number, however all of them said they can imagine buying a number or two if they really like it and they get something for free. The three participants who answered “no” also thought the price was a bit expensive, particularly the participant who picked Illustrerad Vetenskap, he would rather download a free magazine which has advertising in it. The other two who picked Allt om mat felt that they could find free good recipes on the internet. On the other hand two other participants who also picked Allt om mat said that they would definitely buy it if it is the same magazine as you get from the physical store.

5.2.3 Result from the visual elements quiz questions

In this section the result of the nine quiz questions described in the method part will be presented. As noted, the quiz questions were divided into two parts where the first part consisted of four quiz questions used to test the participant’s memory retention “what” and “where” while the second part consisted of five quiz questions used to test the participant’s memory retention “what” and immediacy of understanding of the application that the participant visited from the list. The result of both parts from all units is presented as follows.
Subject: Efficacy of Modern Textile Technologies in the 21st Century

The Fast-Track Review

Introduction

Textile technology has undergone significant advancements in recent years. This study aims to evaluate the current status and future potential of modern textile technologies, focusing on innovative materials, sustainable production methods, and emerging applications.

1. **Innovative Materials**
   - **Smart Textiles**: Materials embedded with electronic components that can change color or respond to environmental stimuli.
   - **Biodegradable Fibers**: Fibers that can be broken down by microorganisms, reducing environmental impact.

2. **Sustainable Production**
   - **Circular Economy**: A production system that fosters sustainable development by eliminating waste and controlling use of natural resources.
   - **Reduced Water Consumption**: Techniques that minimize water use in textile production processes.

3. **Emerging Applications**
   - **Textile Electronics**: Integration of electronic components into textiles for wearable devices.
   - **Textile Sensors**: Sensors embedded in textiles for monitoring physical or environmental conditions.

Conclusion

Modern textile technologies offer promising solutions for sustainability and innovation. Continued research and development in these areas will be crucial for the future of the textile industry.

References

[Insert relevant citations]

Appendix

[Include additional data or supplementary materials as needed]
One participant remembered Pages because he also had the app on his iPhone; this participant also remembered the item and the color blue. This participant also remembered the apps correct position. Another participant remembered Aftonbladet because he recognized the logo. This participant remembered the letters and the yellow color he also remembered the apps correct position. The last participant remembered the app iKamasutra. This participant remembered the name and its position because he thought it was funny to see a sex app become so popular on the App Store. All four apps were positioned among the top 10 apps in the Top Grossing list.

The participant who remembered the app Army of Darkness did remember the name War of Darkness instead of Army of Darkness. The participant remembered the skull and the black color, from the icon, the participant remembered the app because he had accidentally clicked on it by mistake earlier and therefore could also remember the app and where it was positioned.

**Detail result from the iPhone App Store (Part 1)**

Seven participants remembered the name of the app they visited, whereas five participants did not remember anything. Half of the participants also remembered the visual elements that were on the icon. The participants remembered the five apps illustrated in figure 5.2.3b1 below. Once more three participants remembered *Navigon* however they were not the same participants who remembered the same app in the previous unit.

![Apps](image_url)

**Figure 5.2.3b1** Apps participants remembered in the first part (From the Top Grossing section in the iPhone App Store).

Again all of them remembered it because it was the first app in the list. Even though they all remembered the name, its correct position and the arrow on the icon, only one of them remembered the correct color (orange). The other two participants thought the arrow was red.

Two participants remembered *Angry Birds* because they recognized it. They both remembered the bird and the color red; one of them also remembered the colors blue, white and purple. Both participants remembered where the app was located.

One participant remembered *Tower Defense* because he had seen it in the Top Chart on the other units. The participant remembered a tank and the colors bluish and black he also remembered where the he app was located in the list.
The last participant remembered the app *Hipstamatic* because he knew it from before. This participant remembered the black cameras with a yellow dot. However the participant didn't exactly know where the app was located. This app was located among the top five apps and the participant thought it was located somewhere further down in the middle. All the other apps were also located among the top ten except the Tower Defense, which was, located further down.

**Detail result from the iPad App Store (Part 1)**

Only four participants remembered an app including its first name. One participant remembered part of the name while the rest of the participants did not remember any name at all. The four participants who remembered the correct first name remembered the apps TED and NASA shown in the figure 5.2.3c1. Two of them remembered TED and the other two remembered NASA. One participant remembered the app *Peka & Lär ABC*.

![Figure 5.2.3c1](image)

**Figure 5.2.3c1** Apps participants remembered in the first part (From the Top Education section in the iPad App Store).

The participant who remembered *Peka & Lär ABC* remember the name *1-2-3 räkne app för barn* and for this reason also remembered the incorrect elements 123 instead of ABC. Despite the incorrect name and elements the participant remembered almost all the colors and where the app was located. The participant reason for remembering this app was the large spelled numbers (letters in this case) in different colors on the icon.

Both participants who remembered TED owned an iPad. They both remembered the app because they have it on their iPad. Both remembered the correct colors and the element on the icon. However only one of them remembered roughly where the app was located, the other participant did not remember the location at all.

The other two participants remembered the NASA App because they recognized the NASA logo. One of them also had the app on his iPhone because he was very interested in space. This participant remembered the exact item; colors and position of the app while the other one did only remember the logo and it's approximate located...
Part 2 (Last five-quiz questions)

The last five quiz questions in the second part are listed below: As noted these quiz question questions were used to test the participant's memory retention "what" and immediacy of understanding of the application that the participant selected from the list.

5. Do you remember the name of the app you visited?
6. Do you remember the item on the icon and its colors?
7. Do you remember the price of the app?
8. Do you remember if the app works for both devices?
9. Do you know what the app does or which category it belongs to?

The overall result from this part shows that the majority of the participants remembered the app they visited from Top Grossing list on the iPhone App Store and from the Top Education list on the iPad App Store. Five participants remembered the correct name of the app they visited from both Top Grossing list on the iPhone App Store and Top Education list on the iPad App Store whereas only three participants remembered the correct name of the app they visited from the iTunes App Store.

It also shows that the majority of the participants remembered the item, the color and the correct price of the app they visited in the Top Education list from the iPad App Store.

Participants also understood the apps function or its category more from the Top Grossing list on the iTunes App Store and from the Top Education list on the iPad App Store. Nine participants who visited an app from these two units knew what the app does or the category it belongs to. When it comes to remembering whether the app the participants visited works for both iOS devices or not the majority of the participants remembered the correct answer from the iPhone App Store. The following three sections will present the result of part two from each unit in more detail.

Detail result from the iTunes App Store (Part 2)

In the iTunes App Store only three participants remembered the correct name of the app they visited five participants remembered only part of the name and three participants did not remember anything.

All three participants who remembered the name of the app they visited also remembered the colors and the element that was on the icon. The apps they remembered were T3, NOVA2 and Flight Control HD as illustrated in figure 5.2.3a2 on the next page
As we can see from the figure above T3 have a strong color and big character on the icon, which is the same as its name, as for the flight control I should mention that the participant who visited it said the name out loud before he clicked on it; this may have helped him to remember the name, nevertheless the participant had played the game earlier thus could have remembered it anyway. The participant who visited the last app remembered the first name NOVA2; this participant also knew the game from before and this maybe the reason why he remembered it so well. The participants also remembered the right price of the apps, they also remembered whether the app works for both iOS devices or not and both participants who visited the Flight Control, and NOVA2 app knew the category of the app while the participant who visited the T3 didn’t have any clue about what the app doses or which category it belonged to.

The rest of the participants had very difficult time remembering the name of the app they visited. Five participants remembered part of the name of the app they visited. Three of them remembered part of the first word and one remembered the middle word. There were also participants who remembered other words that they made relation to the name for example one participant who visited the app “istart Japanese” remembered the name “iLearn Japanese” instead.

Most of the participants did not remember whether the app they visited was free or paid or how much it costs, only two participants remembered the correct cost of the app and three participants tried to answer but failed two of these participants remembered 7kr when the app was actually free, one participant remembered 15kr when the app was also free and one remembered 22kr when the app was only 7 kr. Even though many of the participants didn’t remember the price of the app, the majority of the participants remembered what the app does or at least remembered which category it belongs to.

**Detail result from the iPhone App Store (Part 2)**

On the iPhone App Store eight participants remembered the name of the app they visited, but only five of them remembered the correct first name the other three participants only remembered only part of the name. The following five apps are the apps that participants remembered the correct first name of.
All five participants who remembered the name of these apps also remembered the item that was on the icon. Almost all of them also remembered the color that was on the icon except the participant who visited the app Kingdom at War, this participant didn’t remember any colors at all.

All five participants also knew what the app was about or at least knew which category it belonged to and all of them except the participant who visited first app in figure 5.2.3b2 MIG – Frågespelet remembered whether the app worked for both devises or not.

Three participants remembered part of the name of the app they visited. Two of them visited the app Kingdoms at War but remembered only the first word Kingdom. The other participant visited the app named Akinator but only remembered the first four letters Akin from the name however the participant remembered the item that was on the icon.

Three of the five participants, who did not remember the name of the app, remembered the item from the icon and the screenshots. One of these participants visited the app MIG-frågespelet and this participant remembered an iPhone picture from the screenshot and for that reason the participant thought the app was an accessory app for the iPhone, when it was actually a pop quiz app, which just happened to have a screenshot of an iPhone.

Another participant visited the app WordCollapse illustrated in the in left side figure below. This participant remembered brown flying rectangle elements from the icon and associated this with music; the participant thought it was a music instrument app that will teach users play music instrument. This was incorrect since the app was actually a word puzzle game.

**Table 5.2.3b2** Apps participants visited and remembered in the second part  
(From the Top Grossing section in the iPhone App Store)

| MIG - Frågespelet du | Kingdoms at War | Angry Birds | Överfallsskydd | Feed Me Oil |

**Figure 5.2.3b2.1** Apps participants visited and remembered part of it in the second part (From the Top Grossing section in the iPhone App Store)
The last participant visited the app Fashion Story illustrated in right side in the above figure. This participant remembered the blond girl the color pink from the icon and assumed that it was some kind of gossip social network app for girls however this was a game for young girls.

Although these participants remembered the visual elements from the icon they did not remembered the price of the app or knew what the app does or which category it belonged too.

**Detail result from the *iPad* App Store (Part 2)**

On the iPad App Store five participants remembered the first name of the app they visited, another five participants remembered part of the name of the app they visited and two did not remember any name at all.

Four participants had visited the app Ballon Darts Deluxe illustrated in figure 5.2.3c2. All four of them remembered the first word balloon, two of them remembered the name balloon darts but one of them added the word children in front of the balloon hence it became children’s balloon darts.

![Ballon Darts Deluxe](image)

**Figure 5.2.3c2** App participants visited and remembered part of in it (From the Top Education section in the iPad App Store)

From the icon one participant remembered balloons and darts, one remembered only the darts and two remembered only the balloons. Three participants remembered the color yellow, one remembered red and blue and another one remembered the color green and pink. Moreover only two of the participants remembered the price of the app, which was free. One participant thought it costs 7kr and the other one did not remember at all. Furthermore this app works for both iOS devices, however two of the participants could not tell if it did or not. The other two assumed it was either for iPhone or iPad only. And finally only two of the participants understood what the app was about. Although the rest of the participants did not remember the name of the app they visited they remembered something from the icon. For example two participants remembered the visual elements from the following two apps.
Both participants remembered the shape of the element that was on the icon, the participant who visited Plex remembered an arrow and the other participant remembered a globe from the icon. None of them did remember any of the colors but both understood what the app was about. The participant who remembered the Hubble Top 100 was also correct about the price of the app but did not remember whether the app worked for both devices or not, whereas the other participant did remember it but was wrong about the price.

Two participants had visited Finger Doodle and Mina Första ord HD (shown on the left side in figure 5.2.3c2.1 below). They remembered the word color and children app as their names, color for the Finger Doodle and children app for Mina Första ord HD. None of them wrote any of the colors but they both understood what the apps did and both were right about the plus sign, however only one of them remembered the correct cost of the app.

Three participants remembered almost the full name of the app they visited. For example two participants remembered the fist name of the apps “Djurparken” and “Phone for kids” correctly and one participant remembered the name “Stava djur lätt” instead of “Stava djur Lite”, (illustrated in the middle in figure 5.2.3c2.1)

All three participants also remembered something from the icon. The participant who visited the app “Djurparken” remembered a blue bird, the other participant who visited the app “Phone for kids” remembered the colors blue, yellow, red and green, and the last participant remembered blue background and something white, from the app “Stava djur Light”. All three participants understood the function of the app. Two of them did not remembered if the app worked for both devices or not, where as one of them wrote that he saw the plus sign, which was wrong. The same two participants were also right about the price whereas the other participant was wrong.
5.3 Result of Post test-questionnaires

As mentioned in the method section participants received questionnaires after each performance on all three units and also a comparative questionnaire at the end of the session. In this part the result from respective questionnaires is presented.

5.3.1. Participant’s feedback on use of the App Store

In this section the participant’s feedback about the use of the App Store on respective units is presented. The feedback is mainly concerned on how the participants felt about using the App Store to perform each tasks on all units.

Table 5.3.1 Participants overall impression of the App Store

Your thoughts about filtering apps by free/paid/grossing?
Note: This question was only designed for the iTunes and the iPad App Store

**Table 5.3.3** Participants thought about filtering apps by their device

**Table 5.3.4** Participants thought about navigation on the App Store
**Table 5.3.5** Participants thought about finding a category on the App Store

**Table 5.3.6** Participants thought about finding a sub-category on the App Store
Your thoughts about searching on the App Store?

Note: This question was mainly used to find out the participant’s thought about the Power search in iTunes App Store

Table 5.3.7 Participants thought about the search function especially the Power Search on the iTunes.

“Which three things did the participants like most with the App Store? ”

➢ On the iTunes App Store the participants liked the following things:
  - The Interface
  - Easy navigation
  - The range and diversity of apps
  - Big and clear icons

➢ On the iPhone App Store the participants liked:
  - The navigation
  - Intuitive
  - The search i.e. it remembers earlier searches
  - Clear logos and pictures

➢ On the iPad App Store the participants liked the following things:
  - Filtering of multiple options
  - Intuitive
  - The range and diversity of apps
  - Easy navigation
  - The search function
  - The interface
  - More function included
• Good screen resolution
• Big and clear icons
• Easy to find popular apps (Top Charts)

“Which three things did the participants like least with the App Store?”

➤ On the **iTunes** App Store the participants thought it was:
  • Messy and disordered
  • Bad navigation
  • Small buttons such as the navigation buttons
  • Insufficient information in the lists, i.e. rating
  • To many boxes

➤ On the **iPhone** App Store the participants thought it was:
  • Limited download (only 20MB)
  • Few functions
  • No tilt function
  • “More Apps by X developer” is missing in the app description page
  • “Costumers also bought” feature is missing in the app description page

➤ On the **iPad** App Store the participants thought it was:
  • Difficult to find Sub-categories
  • Disordered Categories
  • Easy to miss the option current/all versions choice in the customer rating
  • Gray & boring design
  • Difficult to find the sorting button
What changes would the participants make to the App Store?

On the iPhone App Store participants wanted to see more advance functions, and more information without mixing them up, and removing the 20MB download limit. There were also few other comments concerning refund to be able to get the money back in case an app didn’t work, as expected.

When it comes to the iTunes App Store some participants actually said they would redesign the whole store from scratch creating bigger buttons making easier navigation between the functions and adding ratings to the lists. Some participants also wanted to place the sub-categories at the top instead of at the bottom and replace the iTunes left menu with icons. They also wanted to edit the description part, scale down and reduce the big headlines.

On the iPad App Store participants wanted to make the categories frillier, make it easier to find the sub categories, make the layout the same everywhere and make the buttons clearer, remove the iPhone apps and make more rooms. Add a comparison function; add the tilt feature, text size zoom, and have better sorting function.

Table 5.3.8 Participants grade of the App Store
Table 5.3.9 Participants thought about visiting the App Store again

Table 5.3.9 Participants App Store recommendation to others

Participants agreed towards the following statements for the iTunes App Store

- Sven participants agreed that the iTunes App Store was unnecessarily complex; however only two of them stated that they would need the support of a technical person to be able to use the iTunes App Store.
Only three participants agreed that the various functions in the iTunes App Store were well integrated. Moreover only four participants could imagine that most people would learn to use the iTunes App Store very quickly.

Finally seven participants found the iTunes App store very cumbersome to use.

### Participants agreed towards the following statements for the iPad App Store

- Only two participants agreed that the iPad App Store was unnecessarily complex. None of the participants agreed that they would need the support of a technical person to be able to use the iPad App Store.
- Nine participants agreed that the various functions in the iPad App Store were well integrated.
- Finally none of the participants found the iPad App store very cumbersome to use.

#### 5.3.2. Participant’s comparison of the App Store

In this part the results of the comparison of the App Store on the three different units will be presented.

**In general the participants thoughgth the App Store was best in:**

![Bar Chart](image)

**Figure 3.3.2** Participants favourite unit
Filtering apps by free/paid/grossing was best in:

Figure 3.3.3 Filtering apps by free/paid/ grossing in the App Store

In general it was easiest to find apps in:

Figure 3.3.4 Easies unit to find apps on the App Store
What do participants think is the biggest difference between the iTunes App Store, the iPhone App Store and the iPad App Store?

The biggest difference between the **iTunes** App Store and **iPhone** App Store

- Easier to find the categories on the iPhone App Store
- More information on the iTunes App Store
- Everything was better and easier on the iPhone App Store
- Easier to find apps on the iPhone App Store
- More functions on the iTunes App Store
- Extremely pared down in the iPhone App Store
- iTunes is not suited for PCs
- Cluttered on the iTunes App Store
- iPhone App Store is more focused
- iTunes App Store is slower
- iPhone App Store was easier but boring.
- Bigger and better view on the iTunes App Store

The biggest difference between the iTunes App Store and iPad App Store

- Easier to find categories and sub-categories on the iPad App Store
- The iPad App Store was clearer and had bigger buttons
- (2) Easier to find apps on the iPad App Store

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**Figure 3.3.5** Easiest unit to navigate on the App Store
• Easier to navigate on the iPad
• Both has bigger view but its more clearer on the iPad
• iPad App Store is more comfortable
• Easier to navigate on the iTunes

The biggest difference between the iPhone App Store and iPad App Store
• Not much difference
• Bigger view and better filtering in the iPad App Store
• (2) More information was displayed simultaneously on the iPad App Store
• The iPhone App Store was easier
• More features on the iPad App Store
• Easier to find apps on the iPhone App Store
• Clearer on the iPad App Store
• iPad App Store is more comfortable
• iPhone App Store easier but iPad App Store had richer content
• Better sorting in the iPad

What do participants think is the biggest difference between the Apple’s App Store and Google’s Android Market?

This question was only given to the participants who have used the Google's Android market before. In total there were four participants who used Android Market. One participant used the Android Market both on the web and his smartphone.

This participant thought the biggest difference between the iTunes App Store and the Android Market on the web was the sync, because you don't have to sync with Android Market. The participant also thought it was equally easy to find apps on both platforms. However the participant thought it was more difficult to find good apps on Android Market for phones because there are so many strange and bad apps there, moreover he found the iPhone App Store clearer and simpler.

The participant who had used the Android Market on a tablet also found the iPad App Store much more clearer and simpler, he also thought it was easier to find apps on the iPad App Store because it has a better search options. He found the main difference between the iPhone App Store and Android Market on a smartphone to be the download progress of an application he believed it was better in the iPhone because the download progress it shown on the icon screen of the application that is being downloaded. He also thought it was easier to find apps on the iPhone App Store.

The other two participants who also had used the Android Market on a smartphone considered the iPhone App Store to be best because it was easier to sort apps and find apps but also because it was easier to follow up the download progress of an application.
6. Discussion

This chapter will discuss the major findings of the study using some of the theories mentioned in the theory section.

6.1 Discussion of findings from pre-test questionnaires

Consumer demographics are among the most commonly studied factors in online consumer behavior research. The effects of gender, age and income of consumers on online purchase behavior have been studied since late 1990s [Bellman et al. 1990]. For example several studies have shown that men make more purchases and spend more money online than women [Li et al. 1999; Stafford et al. 2004 & Susskind 2004]. Even though it was only one female who participated in this study this effect can be seen anyway. As can be seen in the table summary of consumer demographics factor in table 5.1.1a the female participant had never purchased an app from the App Store before.

When it comes to the age, we see today that the age gap between online and off-line consumers is shrinking, but the effect of age on consumer's intention to purchase online is still unclear. In this study we have seen that the younger peoples intention to purchase application is more than the older one. One of the reasons could be because the games for iPhone have become very popular among the young people. Today we see a lot of young people play games on their iPhone everywhere i.e. on the train.

Furthermore we see that the income does not hinder the consumers from purchasing applications from the App Store. As shown in in table 5.1.1a young participants with lower income purchase apps more frequently than the participants with higher income. A reason for this could be that the young people with lower income has more time to look for apps on the App Store and eventually buys one or two. It should be noted that these young participants only purchase apps that are cheap i.e. apps that cost 7kr. Otherwise most of the participants download free apps from the App Store.

As mentioned in the theory section prior experience or a reflection of a consumer's familiarity with the product, has been shown to strongly influence successive behavior. As we see from the table participants with most experience performed well on the tasks where as the novice participants could not complete the tasks that were given to them. A typical example of this can be seen in the app description page on the iPad. When novice participants who have no experience of using the iPad looked at the screenshot in the app description page they thought there was only one screenshot whereas the experienced participants knew there were more screenshots hidden inside the box.
6.2 Discussion of findings from the Task Analysis

This section will discuss the findings from the tasks that were performed by the participants.

6.2a What do users do when they visit the App Store?

According to [Hughes, 2010] there are two types of users, the types that simply browse on the App Store and the types that search for a specific app. However Hughes only identify these types of users for the desktop iTunes App Store. In this section I will discuss what type of users the participants in my study are and what they actually do when they visit the desktop iTunes App Store and the mobile App Store on the iOS devices.

*Users who search for apps on the App Store*

This study shows that users not only search for specific apps to solve their problems but also search for apps that they have been recommended by someone. For example five participants said that they used their iPhone to “search for apps that they have heard, either from a friend, colleague or seen it on the internet”. They simply search for the app to see if it is worth downloading or buying. They also said that when they are looking for a specific app and they don’t know the name of the app they usually search for the apps function or the company’s name. For example one participant showed that if he were looking for a weather app he would search for “weather” or “SMHI” if he were looking for a Swedish weather app.

*Users who browse on the App Store*

[Hughes, 2010] also clarified that if users are just browsing the App Store from the desktop iTunes they will probably start their search by looking at the “What’s Hot” and “New and Noteworthy”, or the “Top Charts” for ideas. This statement was partly true. Half of the participants started to look for apps in the “New and Noteworthy” sections. The rest “What’s Hot” when they visited the App Store from the desktop iTunes.
According to [Hughes, 2010], this happens because most visitors on the iTunes App Store are first attracted to the colorful icons. And as most of the colorful icons on the iTunes App Store are shown on the first page in the “New and Noteworthy” and “What’s Hot” section as illustrated in the figure below ten out 12 participants started their search by looking in these two sections.

Moreover as the most the icons in the Top Charts are hidden in the right corner of the App Store’s home page as we can see in the above figure almost none of the participants were attracted to look there. Additionally Hughes claimed that visitors on the iTunes App Store will first look at the icon and if the icon looks interesting they will read the name of the app and its category. This statement was also found to be true as all participants followed this order as we can see in figure 6.2a1.

Figure 6.2a Participants first search in the iTunes App Store.

Figure 6.2a1 Participants first and second attention in the iTunes App Store
In the iPad App Store however, the statement only worked partly. As we can see in the next figure all participants looked at the icons first but only half of them looked at the name after that. The other half looked at the ratings instead.

![Figure 6.2a2](image2.png)

**Figure 6.2a2** Participants first and second attention in the *iPad* App Store

Finally on the iPhone App Store seven participants looked at the ratings where as only five looked at the name after having looked at the icons first.

![Figure 6.2a3](image3.png)

**Figure 6.2a3** Participants first and second attention in the *iPhone* App Store

The reason why participants looked at the rating and not the name after the having looked at the icons on the iPhone and iPad App Store is because ratings are shown in the list on both iOS devices as shown in figure 6.2a4 below.

![Figure 6.2a4](image4.png)

**Figure 6.2a4** The app’s ratings are shown in both iPhone and iPad App Store (iPhone screenshot on the left and iPad on the right) but no ratings are shown in the iTunes App Store (middle screenshot). The app’s category is show in both iTunes and iPad App Store.
Users in the app description page

Depending on the unit and the price of the app participants behaved differently once they got to the app description page. If it was a free app they visited, almost all participants skipped or quickly skimmed through the description and look at the screenshots and ratings instead. However if it was a paid app they visited all participants read the description. An interesting notation was that more than half of the participants looked at the customer reviews more on the iPad and iTunes. This is because the customer reviews on these units were displayed on the same page in contrast to the iPhone App Store, which was displayed on the following page.

6.2b What obstacles do users encounter on the way to purchase application from the App Store?

Most of the participant encountered problems in the app description page. For example they found the separation between current version and all version reviews unclear (see figure 6.2b). Most participants did not know there was different versions of reviews, thus when there was there were no review on the current version they assumed it applied for all, most participants missed to click/tap on the “All Versions” to see the older reviews of an application.

![Customer Reviews](image)

Figure 6.2b Customer Reviews “Current” and “All versions” in the App Store

Another obstacle the participants encountered was on the screenshots on the iPad App Store. Most of the participants especially those who never used the iPad App Store found the screenshot in the app description page deceiving. This is because there was no indication that showed the number of screenshots thus participants thought there was only one screenshot that was displayed.

Similarly when the participants visited the category section in the iPad App Store they found the icon of the categories misleading. This is because the icon that represented each category was taken from the same category and this made the participants confusing thinking it is an app and not a category.

Another difficulty many participants had was finding sub-categories on the App Store from both iTunes and iPad. All participants failed this task on both units because it was not intuitive.
To find the sub categories on the iTunes App Store participants had to first choose a category that has a sub category i.e. Games and then scroll down to the bottom of the page. On the iPad App store the participants had to filter the apps by selecting Games from the Top Chart category section.

6.2c What do users think of digital magazine subscription on the App Store?

Most of the participants were confused about the price of the magazines on the App Store. Since none of the participants had ever subscribed to a digital magazine before, most of them though the magazines were all free because the app was free. The participants did not understand that it was a subscription and that they had to pay for each number. Those who understood that it was a subscription said they would expect to get some discount or get few numbers for free.

Participants were also confused about the plus signs inside the icons, and they thought the icons had the more or less the same pattern and look which is easy to recognized nevertheless they thought there should be an image on the icon instead i.e. the first page of the magazine.

When the participants were asked whether they would buy or subscribe to any of the magazines from Bonnier Tidskrifter most of them said they would subscribe to “Krysst”, “Illustrerad Vetenskap” or “All om mat”. Participants chose “Illustrerad Vetenskap” because they recognized it and they liked that it has the same font as the print magazine and they chose “All om mat” because they liked the design but also because they were interested in food.

In general most of the participants thought the price of the magazines was a bit expensive especially those who picked Illustrerad Vetenskap which cost 56kr for each number. Some participants said they would rather download a free magazine, which has some kind of advertising in it. Some participants said they could imagine buying a number or two if they really liked it and they get something for free as well.

6.2d What visual elements did participants remember from the App Store?

As pointed out by [Ware, 2008] visual memory is a process that is pure attention. It is a temporary binding together of visual features and patterns that seem most relevant to the cognitive thread. To find a pattern and see what visual features attracts users attention on the App Store I identified nine quiz questions, which I used to test the participants memory retention “what ” and “where”. In this section I will identify the major findings from the quiz questions.
What visual elements did participants remember on the App Store from respective units?

In general the majority of the participants remembered apps from the Top Grossing list on the iPhone App Store. This is because participants could recognize most of the apps from the list. The reason why participants remembered more apps from the iPhone App Store than from the iTunes App Store might be because there are fewer apps listed on the iPhone App Store. Moreover the apps on the iPhone App Store are displayed in a compact way unlike the iTunes App Store. This may have helped the participant’s process of finding an app that they recognize which they eventually could remember. It should also be note that even though there is less information in the lists on the iPhone App Store, the existing information is highly visible. As we could see in figure 6.2a4 it is not only the ratings that is highly visible in the list on the iPhone App Store but also the name of the app, which is bigger and bolder than what it is on the iPad App Store for instance. Similarly we could observe from the figure that the plus sign (which indicates the compatibility of the app) is also more visible on the iPhone App Store hence most participants could remember apps with the plus sign more from the iPhone App Store than the other two units.

Moreover most participants remembered an app because they recognized it from earlier or because it was among the top apps i.e. the first app. When participants were asked to remember which specific app they visited recently they often tried to remember a name, which sounded convenient to them. For example the participant who visited the app Peka & Lär ABC shown in figure below remembered the name 1-2-3 Räkne app för barn.

\[ \text{Peka & Lär ABC} \]

**Figure 6.2d App remembered by a participant**

The understanding if this participant could be that the app was an education app for children, and because the names *leaning ABC* and *learning 1-2-3* for children is related to each other and they both sound convenient the participant remembered the name Räkne app för barn instead. Because of this the participant also wrote the wrong elements 1-2-3. Most participants remembered the item from the icon and most of its colors especially if the icon had strong colors such as blue, red, yellow, green and black. If we take the app Peka & Lär ABC again we see that it has strong colors hence the participant who visited the app remembered all the colors plus the color red, which is not shown in the app.
When participants were asked how much the app they visited cost the majority of the participants remembered the correct price of the app from the iPad App Store and the iPhone App Store this may be because the price of the app is already shown in the list on both iOS devices. The price of the app is not displayed in the list on the iTunes App Store, however what is interesting is that if users hovers the mouse over the apps on the Top Char the price is suddenly displayed. This is was something that several participants found confusing.

6.3 Discussion of findings from Post test questionnaires

In this part I will present the insights from the post test-questionnaires. The findings from the post-test questionnaires will help us answering the last research questions.

*Which unit do users prefer to use to visit the App Store?*

Half of the participants preferred the iPad App Store of all the three units. They preferred it because they felt it was a mixture of both iTunes App Store and iPhone App Store. They thought it was intuitive, clear and easy to use. Most participants also liked the interface, the navigation and the filtering of multiple options. However participants found it difficult to find sub-categories on the iPad App Store, they also didn’t like the categories they found it disordered and misleading because of the misleading icons. Likewise they found the separation of the current/ all version choice of the customer rating in the app description page misleading.

Five participants preferred the iPhone App Store of all three units because they found it to be intuitive and easy to navigate, nevertheless most participants thought it had limited functions i.e. participants wanted to see the features “More Apps by this developer” and “Customers also bought” in the app description page.

Finally only one participant preferred the desktop iTunes App Store. Although few other participants also thought it had a good interface and a range and diversity of apps the majority of the participants found it messy and disordered, they also thought it had a bad navigation and that it didn’t display important information such as ratings in the list.
7. Conclusions

This chapter will present the conclusions that were drawn from my study. It will also give implications for application developers specifically for the digital magazine publishing company Bonnier Tidskifter AB.

There are various factors that mobile application consumers takes into consideration when purchasing mobile application from the App Store. From the main findings of the present study it can be concluded that:

1. Consumers on the App Store behave differently depending on the unit they are using. This is because applications on the App Store are presented differently in the desktop iTunes App Store and the mobile App Store on the iOS devices.

2. When consumers are looking at a paid app in the app description page no matter which unit they visit it from, they often consider the *description* the *screenshots*, and *the ratings* whereas they do not consider these features so much when they look at a free app on the App Store.

3. Consumers consider reading the customer reviews on the iTunes and iPad App Store more than on the iPhone App Store because the customer reviews on these two units are displayed on the same page.

4. When consumers browse the App Store from the iTunes they may browse more on the main page because that is where all the attractive icons are listed. On the other hand consumers may browse more on the Top Chart on the iPad and iPhone App Store.

5. According to the present study the following factors are identified as obstacles for consumers on the way to purchase application from the App Store.
   - Confusion about the customer reviews separation that is between the current version and all versions in both iTunes and iPad App Store.
   - Lack of knowledge on the appearance of screenshot in the app description page on the iPad App Store.

6. Consumers on the App Store seem to be attracted of visual elements that they are already familiarized with, apps with famous logos and known fonts and styles but also to coherent and descriptive app names and strong colors (i.e. red, green, yellow, black and blue, respectively).

7. Consumers found the iTunes App Store messy and cumbersome to use. They preferred using the iPad App Store because they found it to be a good mixture of both iTunes and iPhone App Store but also because it has more options to consider e.g. the ability to view both Top Free and Top Paid apps on the same page.
7.1 Recommendations

This study provides us with useful suggestions and recommendations, which application developers, and digital magazine publishers can take advantage of.

In order to influence more downloads and successfully sell iPhone/iPad apps on the App Store one should consider to:

- Have a recognizable and understandable app icon with branded font styles and strong colors e.g. red, green, yellow, blue or black. Making the app recognized seem to be the best way to influence more visit and possible download.

- Advertise the app: A good way to make an app more recognizable is by advertising it. This can be done for example using the electronic word of mouth. The study showed that users also search for apps that they have been recommended, i.e. by their friends, colleges hence using the word of mouth method would be an excellent way to get the apps message out. The word of mouth is reputation-based form of marketing. It is about building momentum for an app and getting everyone, especially key influencers, to talk about the app.

- Put the print magazines coverage on the icon: Since consumers might recognize the magazines coverage putting the cover page of the print magazine on the icon may trigger the consumers even more. Fortunately Bonnier Tidsskrifter AB has already done this change. At the time of this study the cover page of the magazines from Bonnier Tidsskrifter AB was not on the icons.

- Have icons that clearly show a connection with the apps function: A good example of this can be seen on the app “Krysset”. Because this app had a clear connection with its function participants immediately understood what the app was about and quickly decided to click on it to see more information.

- Get your app on the main page on the iTunes App Store: This is particularly important when your app is new. Hence most consumers will look at the main page in first hand when they visit the App Store from the iTunes. Once the app is known you should try to move it among the Top Chart to gain more visits and downloads from consumers who visit the App Store from their mobile devices.

- Get customer reviews fast for the updated version of your app: It is important that the app gets customer reviews as soon as it has been updated in order for consumers to see there are reviews on the current version. One-way of doing this is can be by rewarding frequent app users to write review about the updated version.
• Choose the right screenshot for your iPad app: When deciding which screenshot you want to show on the iPad App Store you should focus on putting the most relevant screenshot first since novice users may miss to look at the other screenshots. Another solution would be to add indication e.g. an arrow on the first screenshot that shows the consumers there are more screenshot to follow.

• Since most participants seem to prefer to use the iPad App Store it is advisable to give more attention on the iPad apps in the future, however as most participants found the price of digital magazines confusing and a bit expensive it would be advisable to reconsider the pricing strategy and make it more clear e.g. highlight discounts and new offers in the app description page.

7.2 Future research

This has been a very interesting and rewarding study. In the future I recommend similar study in a larger scale, since the present study had time and resource limitations I could only conduct the study with a small groups of people. Hence it would be interesting to conduct a study on a larger sample including people from different backgrounds with different gender. This could find new segments, with new analytical possibilities.

It would also be interesting to do similar study with and without the think aloud method and other data gathering techniques e.g. eye tracing technology to see the possible different result that could be obtained.

This study was conducted from the consumers point of view; in the future it could be conducted with greater focus towards the application retailer or look at the consumer behavior on other platforms such as Google’s Android Market and see if the found factors are the same. In general, this study could be conducted with a greater range of properties and with greater detail towards the specific factors.
8. Reference


Hughes, J. (2010). iPhone and iPad Apps – Sceretes to Selling Your iPhone and iPad Apps Marketing. Chapter 5 Building Your App's Total Message.


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New York Times, Time updates iPad app with full content, free until 2011,  


Appendix

Appendix I. Looking for Participants

Deltagare sökes till en studie om App Store

Hej

Jag håller på att göra en studie om App Store för mitt examensarbete tillsammans med Bonnier Tidskrifter AB och jag söker 13 deltagare som är mellan 20 och 50 år, har en iPhone, iPod Touch eller iPad och är intresserade av appar.

Studien äger rum på Ekononmikum i Uppsala och tar ca 1 timme. Jag kommer att bjuda på lite fika och **som kompensation får man en årsprenumeration på valfri tidning från Bonnier Tidskrifter.** Kravet för att man ska delta i studien är att ni har en iPhone, iPod Touch eller en iPad och att ni har besökt App Store mer än en gång. Om ni är intresserad av att delta i studien behöver ni ta med er en iPhone eller iPod Touch när ni kommer.

Ni kan delta i studien när som helst under vecka 25 – 27. Skicka ett e-mail till Romel.Ayalew@gmail.com eller ring 073 - 583 71 93 så bokar jag in er direkt.

Med vänliga Hälsningar
Romel
Hej och välkommen!

Först och främst vill jag tacka dig för att du har kommit hit. Du har alltså kommit hit för att delta i en studie om App Store som jag genomför tillsammans med Bonnier Tidskrifter AB.


Appendix III. The consent form

Samtyckande form om inspelning

Välkommen till studien om App Store!


Studien kommer att spelas in. Utdrag ut denna inspelning kan komma användas vid en presentation för Bonnier Tidskrifter AB samt vid en presentation inför lärarna vid Uppsala Universitet.

Nedan får du två val. Ringa in det val du samtycker med.

Jag godkänner att utdrag ur inspelningen får visas.

Jag godkänner INTE att utdrag ur inspelningen får visas.

_________________________
Ort och datum
_________________________
Namnteckning
_________________________
Namnförtydligande
Appendix IV. Pre test questionnaire

Bakgrunds frågeformulär

1. Är du man eller kvinna?
   □ Man   □ Kvinna

2. Hur gammal är du?
   __________________________

3. Vad har du för yrke?
   ________________________________________________________________

4. Hur mycket pengar, efter skatt, tjänar du i genomsnitt varje månad?
   (Ink. Lön, bidrag, lån, etc)
   □ 5 000 – 6 999 SEK
   □ 7 000 – 8 999 SEK
   □ 9 000 – 10 999 SEK
   □ 11 000 – 12 999 SEK
   □ ≥ 13 000 SEK

5. Har du en iPhone? Om ja, vilken modell
   □ iPhone
   □ iPhone 3G
   □ iPhone 3GS
   □ iPhone 4

6. Har du använt en androidtelefon förut?
   □ Ja   □ Nej

7. Hur länge har du haft din iPhone?
Ca:________________________

8. Hur många timmar per dag använder du din iPhone?

< ½ h □ ½ h - 3 h □ 4-7 h □ > 7 h □

9. Till vad använder du din iPhone främst? (Rangordna 5 alternativ)

Ranka från 1 till 5. Där 1 är det alternativ du främst använder din iPhone till och 5 är det alternativ du använder din iPhone minst till.

___ Ringa/SMS/MMS
___ E-mail
___ Söka information/surma runt
___ Spela spel
___ Lysna på musik
___ Titta på video klipp
___ Hämta och köpa appar från på App Store

10. Hur många appar har du i din iPhone? (Om du inte räknar med förinstallerade appar)

□ < 20
□ 21 - 50
□ 51 - 80
□ 81 - 100
□ > 100

11. Hur många av dem är betalda appar?

Inga □ 1-5 st □ 6-10 st □ > 10 st □

12. Har du en iPad? (Om nej gå till fråga 16)

Ja □ Nej □

13. Till vad använder du din iPad främst? (Rangordna 5 alternativ)
Ranka från 1 till 5. Där 1 är det alternativ du främst använder din iPad till och 5 är det alternativ du använder din iPad minst till.

___ Läsa tidning/magasiner
___ Spela spel
___ Titta på film
___ Surfa på internet med Safari
___ Leta efter och hämta appar på App Store
___ Lyssna på musik
___ Skicka läs/E-mail

14. Hur många appar har du i din iPad? (Om du inte räknar med förinstallerade appar)

☐ < 20
☐ 21 - 50
☐ 51 - 80
☐ 81 - 100
☐ > 100

15. Hur många av dem är betalda appar?

Inga ☐ 1-5 st ☐ 6-10 st ☐ > 10 st ☐

16. Har du använt en iPad eller annan surf- eller läsplatta förut?

Om ja hur många gånger, om nej gå till fråga 18

1 gång ☐ 2-6 gånger ☐ 7-10 gånger ☐ > 10 gånger ☐

17. Till vad använde du surf- eller läsplattan främst? (Rangordna 5 alternativ)

Ranka från 1 till 5. Där 1 är det alternativ du främst använde surfplattan till och 5 är det alternativ du använde läsplattan minst till.

___ Läste en tidning/magasiner
___ Spela spel
___ Tittade på video
___ Surfa på internet med Safari
___ Hämtade/ köpte appar på App Store
___ Lyssnade på musik
___ Skickade läs/E-mail

18. Har du besökt App Store med en iPad förut? Om ja hur många gånger, om nej gå till fråga 20

1 gång ☐ 2-6 gånger ☐ 7-10 gånger ☐ > 10 gånger ☐


20. Hur ofta besöker du App Store med din iPhone?

<table>
<thead>
<tr>
<th>Ofta besöker</th>
<th>□</th>
<th>□</th>
<th>□</th>
<th>□</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sällan</td>
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<td></td>
</tr>
<tr>
<td>Minitäi</td>
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<td></td>
</tr>
<tr>
<td>En gång per dag</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flera gånger per dag</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

21. Vad gör du när du besöker App Store med din iPhone? (Ranka 5 alternativ)

**Ranka** från 1 till 5. Där 1 är det alternativ du gör främst när du besöker App Store med din iPhone och 5 är det alternativ du gör mindre när du besöker App Store med din iPhone.

<table>
<thead>
<tr>
<th>Alternativ</th>
<th>□</th>
<th>□</th>
<th>□</th>
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</thead>
<tbody>
<tr>
<td>Bläddrade runt Top Charts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bläddrade runt i Kategorier</td>
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</tr>
<tr>
<td>Bläddrade runt i blickfånget</td>
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<tr>
<td>Sökte efter appar</td>
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<tr>
<td>Köpte appar</td>
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<td></td>
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<tr>
<td>Hämtade gratis appar</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Läste beskrivningar och användarens omdöme av olika appar</td>
<td></td>
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</tbody>
</table>


<table>
<thead>
<tr>
<th>Gånger</th>
<th>□</th>
<th>□</th>
<th>□</th>
<th>□</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nej</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>En gång</td>
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<tr>
<td>2-6 gånger</td>
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<tr>
<td>7-10 gånger</td>
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<tr>
<td>&gt; 10 gånger</td>
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</tbody>
</table>

23. Vad gjorde du när du besökte App Store med iTunes på datorn?


<table>
<thead>
<tr>
<th>Alternativ</th>
<th>□</th>
<th>□</th>
<th>□</th>
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</thead>
<tbody>
<tr>
<td>Letade efter appar i Top Charts till iPhone</td>
<td></td>
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<td></td>
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<tr>
<td>Letade efter appar i blickfånget till iPhone</td>
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<td></td>
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<tr>
<td>Letade efter appar i kategorier till iPad</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sökte efter appar till iPhone</td>
<td></td>
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<tr>
<td>Köpte appar till iPhone</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Hämtade gratis appar till iPad</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Läste beskrivningar och användarens omdöme till iPad</td>
<td></td>
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</tr>
</tbody>
</table>

24. Har du besökt Googles Android Market för ut? Om ja med vilken enhet/enheter?

<table>
<thead>
<tr>
<th>Ofta besöker</th>
<th>□</th>
<th>□</th>
<th>□</th>
<th>□</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nej</td>
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<td></td>
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</tr>
<tr>
<td>Telefoni</td>
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<tr>
<td>Webben</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surf- eller läsplattan</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Appendix V. Questions about the use of App Store

Frågeformulär om användningen av App Store

Var snäll och markera enheten och fyll i enkäten så ärligt som möjligt, motivera gärna ditt svar. Ditt svar kommer att ha stort betydelse för denna studie.

1. Vad är ditt allmänna intryck av App Store i iTunes, iPhonen och iPaden?

□ Mycket bra □ Bra □ Tillfredsställande □ Dåligt □ Mycket dåligt

Motivera gärna:
__________________________________________________________
__________________________________________________________
__________________________________________________________

2. Vad tycker om sortering funktionen (Free/Paid/Grossing) i App Sore i iTunes, iPhonen och iPaden?

□ Mycket bra □ Bra □ Tillfredsställande □ Dåligt □ Mycket dåligt

Motivera gärna:
__________________________________________________________
__________________________________________________________
__________________________________________________________

3. Hur lätt var det att navigera tillbaka till en sida i App Store i iTunes, iPhonen och iPaden?

□ Mycket lätt □ Enkel □ Medel □ Svårt □ Mycket svår

Motivera Gärna
__________________________________________________________
__________________________________________________________
__________________________________________________________

96
4. Hur lätt var det att navigera tillbaka till App Stores huvudsida i iTunes?

☐ Mycket lätt  ☐ Enkel  ☐ Medel  ☐ Svårt  ☐ Mycket svår

Motivera Gärna

______________________________________________________________________________________

______________________________________________________________________________________

______________________________________________________________________________________

5. Hur lätt var det att hitta kategorierna i App Store i iTunes, iPhonen och iPaden?

☐ Mycket lätt  ☐ Enkelt  ☐ Medel  ☐ Svårt  ☐ Mycket Svår

Motivera gärna:

______________________________________________________________________________________

______________________________________________________________________________________

______________________________________________________________________________________

6. Hur lätt var det att hitta del-kategorin pusselspel i App Store i iTunes, iPhonen och iPaden?

☐ Mycket lätt  ☐ Enkelt  ☐ Medel  ☐ Svårt  ☐ Mycket Svår

Motivera gärna:

______________________________________________________________________________________

______________________________________________________________________________________

______________________________________________________________________________________
7. Vad tycker du om sökningen i App Store i iTunes, iPhone och iPaden?

☐ Mycket bra  ☐ Bra  ☐ Tillfredställande  ☐ Dåligt  ☐ Mycket dåligt

Motivera gärna:

______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________

8. Vad tycker du om sökningsfunktionen Power Search i App Store i iTunes?

☐ Mycket bra  ☐ Bra  ☐ Tillfredställande  ☐ Dåligt  ☐ Mycket dåligt

Motivera gärna:

______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________

10. Vad tycker du om filtreringen av iPhone och iPad appar i App Store i iTunes och iPaden?

☐ Mycket bra  ☐ Bra  ☐ Tillfredställande  ☐ Dåligt  ☐ Mycket dåligt

Motivera gärna:

______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
11. Hur lätt var det att **hitta appar** i App Store i iTunes, iPhone och iPaden?

□ Mycket lätt □ Enkelt □ Medel □ Svårt □ Mycket svårt

Motivera gärna

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

12. Vilka tre saker gillar du **bäst** med App Stor i iTunes, iPhonen och iPaden?

a. ____________________________________________

b. ____________________________________________

c. ____________________________________________

13. Vilka tre saker gillar du **minst** med App Stor i iTunes, iPhonen och iPaden?

a. ____________________________________________

b. ____________________________________________

c. ____________________________________________

14. Om du var tvungen att betygsätta App Store i iTunes, iPhonen och iPaden, från A till F, där A var lyckat och F misslyckat, vilket betyg skulle du ge det och varför?

□ A □ B □ C □ D □ E □ F

Motivera gärna

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________
15. Om du fick göra ändringar i App Store i iTunes, iPhone och iPaden vilka förändringar skulle du göra?

Motivera gärna

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

16. Kommer du att fortsätta använda App Store i iTunes, Phonen och iPaden?

☐ Ja ☐ Kanske ☐ Nej

17. Skulle du rekommendera någon att använda App Store i iTunes, iPhone och iPaden?

☐ Ja ☐ Kanske ☐ Nej

18. Vänligen ange om du håller med eller inte i följande uttalande.

<table>
<thead>
<tr>
<th>Uttaledande</th>
<th>Håller med helt</th>
<th>Håller med delvis</th>
<th>Håller inte med</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag uppfattade App Store i iTunes/Paden som onödigt komplicerad.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag tror att jag skulle behöva stöd av en kunnig person för att kunna använda App Store i iTunes/Paden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag tycker att de olika funktionerna på App Store i iTunes/Paden var väl inte integrerade</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag kan föreställa mig att de fiesta människorna skulle lära sig att använda App Store i iTunes/Paden mycket snabbt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag tycker att systemet var väldigt besvärligt att använda.</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Appendix VI. Comparison questions about the App Store

Jämförelse av App Store i iTunes, iPhonen och iPaden

Var snäll och fyll i denna enkät så ärligt som möjligt, motivera gärna ditt svar. Ditt svar kommer att ha stort betydelse för denna studie.

1. I allmänt så tycker jag att App Store var bäst i: Välj ett av de alternativen.

□ i iPhonen          □ iTunes          □ iPaden

Motivera gärna:
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________

2. Jag tycker att filtreringen av iPhone och iPad appar var bättre i iPaden jämfört med i iTunes.

Ringa in den siffran i skalan som passar dig bäst

Håller inte med  1  2  3  4  5  6  7  Håller med

Motivera gärna:
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________

3. Jag tycker att sorteringen av Free/Paid/Grossing var bäst i: Välj ett av alternativen

□ i iPhonen          □ iTunes          □ iPaden
Motivera gärna:

______________________________________________________________________________________

______________________________________________________________________________________

______________________________________________________________________________________

4. Jag tycker generellt att det var lättast att hitta appar i: Välj ett av alterniven

☐ iPhonen       ☐ iTunes       ☐ iPaden

Motivera gärna:

______________________________________________________________________________________

______________________________________________________________________________________

______________________________________________________________________________________

5. Jag tycker att det var enklast att navigera i:

☐ i iPhonen       ☐ iTunes       ☐ iPaden

Motivera gärna:

______________________________________________________________________________________

______________________________________________________________________________________

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6. Vad tyckte du var största skillnaden i App Store mellan:

   a. iTunes på datorn och iPhonen

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b. iTunes på datorn och iPaden

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c. iPhonen och iPaden

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a. I datorn: App Store i iTunes och Android Market på webben

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b. I telefonen: App Store i iPhonen och Android Market i android-telefoner

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