

UNIVERSITY NAME

DOCTORAL THESIS

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## Thesis Title

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*A thesis submitted in fulfillment of the requirements  
for the degree of Doctor of Philosophy*

*in the*

Research Group Name  
Department or School Name

May 6, 2018



## Declaration of Authorship

I, John SMITH, declare that this thesis titled, "Thesis Title" and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed:

Date:



*"Thanks to my solid academic training, today I can write hundreds of words on virtually any topic without possessing a shred of information, which is how I got a good job in journalism."*

Dave Barry



UNIVERSITY NAME

*Abstract*

Faculty Name  
Department or School Name

Doctor of Philosophy

**Thesis Title**

by John SMITH

The Thesis Abstract is written here (and usually kept to just this page). The page is kept centered vertically so can expand into the blank space above the title too...



## *Acknowledgements*

The acknowledgments and the people to thank go here, don't forget to include your project advisor...



# Contents

<b>Declaration of Authorship</b>	<b>iii</b>
<b>Abstract</b>	<b>vii</b>
<b>Acknowledgements</b>	<b>ix</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Background . . . . .	1
1.2 Global Website design . . . . .	1
1.3 Tetra Pak . . . . .	2
1.4 Limitations . . . . .	2
1.5 Purpose . . . . .	2
1.6 scope . . . . .	2
<b>2 Theory</b>	<b>3</b>
2.1 Cultural differences in Perception . . . . .	3
2.2 User Centred design . . . . .	3
2.3 Usability . . . . .	3
2.4 User Experience . . . . .	3
2.5 Elements of Web Design . . . . .	4
2.6 F-shaped Pattern . . . . .	4
2.7 Perception in asia (f-shaped pattern.) . . . . .	4
2.8 Natural Mapping . . . . .	4
2.9 User Testing . . . . .	4
2.10 Usability Metrics . . . . .	4
2.10.1 Performance Metrics . . . . .	4
2.10.2 Self-Reported Metrics . . . . .	5
2.11 Usability Testing . . . . .	6
2.12 Colour and Culture . . . . .	6
2.13 Trends . . . . .	6
2.14 Culture and Usability . . . . .	6
2.15 Great Firewall of China . . . . .	6
2.16 Asynchronous . . . . .	7
2.17 AWS - Amazon Web Services . . . . .	7
2.17.1 EC2 . . . . .	7
2.17.2 Auto scaling . . . . .	7
2.17.3 Load balancing . . . . .	7
2.17.4 RDS . . . . .	7
2.17.5 S3 . . . . .	7
2.17.6 Elastic Beanstalk . . . . .	8
2.18 React-Redux . . . . .	8
2.18.1 Redux-saga . . . . .	8
2.19 MySql database . . . . .	8

2.20 API . . . . .	8
2.21 Statistical significance . . . . .	9
2.22 T-plot (whatever it's called) . . . . .	9
2.23 Null hypothesis . . . . .	9
2.24 P value . . . . .	9
2.25 waterfall . . . . .	9
<b>3 Methodology . . . . .</b>	<b>11</b>
3.1 Structure . . . . .	11
<b>4 Phase 1 - Investigation . . . . .</b>	<b>13</b>
4.1 Method . . . . .	13
4.2 Results . . . . .	13
4.3 Chinese vs Western websites comparison . . . . .	13
4.3.1 QQ . . . . .	13
4.3.2 BBC . . . . .	14
4.3.3 Taobao and Ebay . . . . .	14
4.3.4 Analyses of Ctrip . . . . .	15
4.4 Conclusion Phase 1 . . . . .	16
4.4.1 Common Chinese design that differs from western design . . . . .	16
<b>5 Phase 2 - Prototyping . . . . .</b>	<b>19</b>
5.1 Method . . . . .	19
5.2 Results . . . . .	19
5.2.1 Low-fi Prototype . . . . .	19
5.2.2 High-fi Prototype . . . . .	19
5.2.3 Sus . . . . .	19
5.3 Discussion . . . . .	20
5.4 Conclusion . . . . .	20
<b>6 Pilot study . . . . .</b>	<b>21</b>
6.1 Method . . . . .	21
6.2 Results . . . . .	21
6.3 Discussion . . . . .	22
6.4 Conclusion . . . . .	23
<b>7 Phase 3 - Building the Interfaces . . . . .</b>	<b>25</b>
7.1 Method . . . . .	25
7.1.1 Front-End . . . . .	25
Homepage . . . . .	26
BBC and QQ . . . . .	27
SUS . . . . .	27
7.1.2 Database . . . . .	27
7.1.3 Api . . . . .	28
7.1.4 Hosting AWS . . . . .	28
7.1.5 Beta-tests . . . . .	29
7.1.6 Launch . . . . .	29
7.1.7 How the test was conducted . . . . .	30
7.2 Results . . . . .	30
7.3 Discussion . . . . .	30
7.4 Conclusion . . . . .	30

<b>8 Phase 4 - Analyzing Data</b>	<b>35</b>
8.1 Method . . . . .	35
8.1.1 Results . . . . .	35
8.1.2 Discussion . . . . .	35
8.2 Conclusion . . . . .	35
<b>9 Results</b>	<b>37</b>
9.1 Meaning of results . . . . .	37
9.2 Conducting a non monitored test . . . . .	37
9.2.1 The good . . . . .	37
9.2.2 The Bad . . . . .	37
9.2.3 Subsection 2 . . . . .	37
9.3 Main Section 2 . . . . .	37
<b>10 Discussion</b>	<b>39</b>
10.0.1 Emerging trends in china . . . . .	39
10.0.2 Reason for differences . . . . .	39
10.1 Limitations . . . . .	39
10.2 Future work . . . . .	39
<b>11 Conclusion</b>	<b>41</b>
11.0.1 Emerging trends in china . . . . .	41
11.0.2 Reason for differences . . . . .	41
11.1 Limitations . . . . .	41
11.2 Future work . . . . .	41
<b>Bibliography</b>	<b>43</b>



# List of Figures

4.1	QQ.com . . . . .	14
4.2	QQ's Menu bar . . . . .	14
4.3	ebay . . . . .	15
4.4	Ebay's menu bar . . . . .	15
4.5	Taobao . . . . .	16
4.6	Taobao' menu bar . . . . .	16
4.7	Chinese version of Ctrip . . . . .	17
4.8	English version of Ctrip . . . . .	18
6.1	BBC pilot study results . . . . .	22
6.2	QQ pilot study results . . . . .	23
7.1	Homepage . . . . .	26
7.2	Homepage . . . . .	26
7.3	Users View . . . . .	27
7.4	QQ . . . . .	28
7.5	BBC . . . . .	31
7.6	SUS . . . . .	32
7.7	Done . . . . .	32
7.8	Database Schema . . . . .	33



# List of Tables



## Chapter 1

# Introduction

This master thesis has been completed for the Department of Design Sciences at Lund University in collaboration with the company Tetra pak. This first chapter will introduce the background, purpose and scope.

### 1.1 Background

Working in Shanghai for a summer I noticed that there was a big difference in how Chinese websites where designed compared to western sites. I found the Chinese sites very overwhelming in information density. I assumed that this was because of a simple difference in cultural trends. Later I came across some cross-cultural research articles proving that there is a difference in how people in western and eastern societies perceive information. Does this also influence how the Chinese web pages are designed? Together with Tetra pak, this thesis project is created to examine the differences in web design in eastern and western cultures and to find out if a global interface for both cultures can be created.

### 1.2 Global Website design

Designing websites for a global market are something that is becoming more and more necessary for larger companies to do. In spite of the need and popularity of global designed websites not much research has been made in this field for user experience. Many companies simply try to launch their local product globally and hope the design work everywhere. Some companies simply create a new product for the different market without researching if this is necessary or not. It is clear that websites look different in cultures all over the world. But how much of this difference is because of cultural trends? Are parts of these websites been designed after a difference in how the culture perceive information? How well can do users from different cultures perform on different web elements?

There is a surprising lack of research done on this subject, despite this, companies all over the world spend millions trying to build information products for cultures without the least bit of knowledge about how the users from that culture perceive information. There are a quite a few assumptions that are usually made about users in different cultures. The first and most common assumption is that all users process information the same way. This is proven to not be the case despite this most people believe that the differences in web layout are mostly due to a difference in language or due to a trend. The second assumption is that because eastern websites are designed differently the users there prefer this type of design, or this type of design is more suitable for users of that culture since it is what they are used to. There

are quite a lot of unclarities when examining web pages and web apps in different cultures and hopefully, this thesis will resolve some of these unclarities.

### **1.3 Tetra Pak**

### **1.4 Limitations**

### **1.5 Purpose**

The purpose of this thesis is to research the differences between western and eastern website usage, and how differences in perception plays a role in this. To do this we will try to answer the following questions:

1. Are differences in interface design due to differences in information processing styles or trends?
2. Do different processing styles in Western (analytical) versus Chinese (holistic) users significantly affect performance on different interfaces?
3. Can one Global interface be created, or should web designers focus on creating separate user interfaces for different cultures?

Tetra pak is a global company that is

### **1.6 scope**

Focus on differences between china and sweden

## Chapter 2

# Theory

### 2.1 Cultural differences in Perception

Cultural differences affect more than just how consumers behave, it also affects how users perceive information. According to (bla and bla) "good quote" [7]

### 2.2 User Centred design

### 2.3 Usability

### 2.4 User Experience

User Experience (UX) is an expression popularised by Donald Norman and Jakob Nielsen in "The design of everyday things" (länska på rätt sätt)(Källa!). Norman and Nielsen define User Experience in the following way "True user experience goes far beyond giving customers what they say they want, or providing checklist features. In order to achieve high-quality user experience in a company's offerings there must be a seamless merging of the services of multiple disciplines, including engineering, marketing, graphical and industrial design, and interface design" (Norman and Nielsen, 2016). (latex quota på rätt sätt).

The term "User Experience" is a widely applied term in web design and it is associated with a multitude of definitions. The International Organization for Standardization (ISO) has also attempted to define the term. Specifically, the organization, in ISO 9241-210, defines UX as "A person's perceptions and responses that result from the use and/or anticipated use of a product, system or service." Further, the ISO states that "UX includes all users' emotions, beliefs, preferences, perceptions, physical and psychological responses, behaviours and accomplishments that occur before, during and after use". The standard also states that "UX is a consequence of functionality, system performance, interactive behaviour and assistive capabilities of the interactive system, the user's internal and physical state resulting from prior brand image, presentation, experiences, attitudes, skills and personality, and the context of use"

## 2.5 Elements of Web Design

### 2.6 F-shaped Pattern

The F-shaped pattern refers to findings made in a study on user eye movements [10] (find correct article for f-shaped pattern and cite it here as well). This pattern has been dubbed the "F-shaped pattern" since the study found that users often scan through pages starting with a horizontal movement, usually across the upper part of the content area. Users then tend to read across in a second horizontal movement further down on the page that typically spans a shorter area. Lastly, users scan the content's left side in a vertical movement. When measuring users' eye gazing as a heat map, this creates a pattern that resembles an F. Web developers, either knowingly or unknowingly, often design their websites according to this pattern. The F-shaped pattern is not an absolute law and several other scanning patterns exist, but the F-shaped pattern remains the most prevalent in western cultures. [9] If a developer designs a page without knowledge about this pattern, they risk putting important information in places where users might miss it. The F-shaped pattern is mostly prevalent in western cultures, where the studies have been conducted.

### 2.7 Perception in asia (f-shaped pattern.)

### 2.8 Natural Mapping

### 2.9 User Testing

### 2.10 Usability Metrics

There are several different types of metrics that can be used to measure the usability of a prototype or product. Among these metrics are performance metrics, Issues-based metrics, self-reported metrics, behavioral metrics, comparative metrics, and etc [13]. For this project, we have decided to focus on performance metrics and self-reported metrics. Usability metrics are powerful tools that are generally under utilized by most companies [6].

#### 2.10.1 Performance Metrics

Performance metrics can be used to measure a user's behavior when interacting with a product. In this project, the performance metric data will automatically be gathered and sent to a database. This data will then be further analyzed to gain a deeper understanding of how the users engage with the product. (DOUBLE CHECK ->) To be statistically significant the data gathered with a appropriate confidentiality interval at least eight participants are needed [13].(<- DOUBLE CHECK)

There are 5 basic performance metrics which include: [13]

- Task success
- Time-on-task
- Errors
- Efficiency

- Learnability

In order to measure the task rate success metric, the required task must be clearly defined and have an unambiguous goal. For example, "send an email to person x" reflects a well structured task, thus, task success rate can be accurately measured given the well-defined objective. Conversely, the task, "research budget car brands" does not offer clear guidelines and can be responded to in multitude of ways due to its ill-defined objective and, as such, would not be suitable for measuring task success. There are two types of task success forms. The first is represented as a binary measure; either the user completes or fails to complete the task [13]. The second type is continuous rather than categorical as it measures the level of success. This metric is particularly useful if the given task can be partially completed. One example of a task that would benefit from partial success rate measurements would be if we ask users to open a specific video on YouTube, but the user opens the wrong video. The user would still be somewhat correct as she correctly navigated to YouTube, but failed to select the correct video, yielding a partial success. The simplest way of measuring success levels is to assign numeric values to the study subject's performance (i.e., this might range from 1 to 10, where 5 represents that the user completed half of the task).

There are several ways in which users' can fail to accomplish their tasks. Users may, for instance, incorrectly assume the task has been completed when, in fact, it is only partially complete. Further, users may give up on trying to solve the task out of frustration or users may falsely believe they successfully finished the task when, in actuality, they performed the wrong task. This data can be invaluable to the process of uncovering how well users understand a given system.

Time-on-task is a simple measure; it simply logs the time users' spent to complete or fail the task at hand.

Errors in this case do not refer to programmatic errors, but to mistakes made by the user. One example of an error is when users select an incorrect tab before finding the correct one. In this example, every wrong path and/or click used in performing the task, except the optimal one, is logged as an error. Error measurements can assist developers in gauging how well a user understands the website as well as how intuitive the website is for a first time user.

Efficiency is analogous to the Time-on-task measure, but it can also be measured by how many steps users took to complete the task. It is important to note that efficiency should only be measured on successful tasks [13].

Learnability represents the degree to which a user becomes more efficient at using a product over time. Essentially, the amount of time reduced in completing a task from the first iteration to the second or third provides an indication of how well the user learned to interact with the product.

### 2.10.2 Self-Reported Metrics

Self-reported metrics are employed when directly asking users to describe their experience engaging with the product. One means of obtaining self-reports is through surveys. A common method for doing this is by employing the System Usability Scale (SUS) created by John Brooke [13] [1]. SUS is a survey containing 10 questions with a scale from 1-5, where 5 corresponds to "strongly agree" and 1 reflects

"strongly disagree", for each question (See appendix X). SUS is a metric tool, used over 22 years, that has been proven to be a streamlined and robust tool for gauging usability [1]. (SEE APENDIX for SUS eexample )

## **2.11 Usability Testing**

## **2.12 Colour and Culture**

Different cultures have always preferred distinct colour schemes, and this variation has also effected the degree to which a user trusts or likes a website. Not all people prefer the same colour layouts and a study conducted by (XXXX) [2] indicates that this colour bias may be rooted in culture. The study suggests that the colour schema a website uses influences the trust and likeability of the web page. The study further indicates that individuals hailing from different cultural backgrounds tend to select colours associated with their culture. These cultural factors must be accounted for when designing websites for any given culture as colour schema impacts how well users like and engage with the website. Selecting colours that users from a certain culture feel more comfortable with can be vital to enhancing the user's experience with the site.

## **2.13 Trends**

Trends, simply something that is popular in a particular moment, are an ever-present phenomenon. However, simply because a certain behaviour or style is trending does not necessarily indicate that it is the most optimal way to perform an action; on the contrary, usually the opposite is true. Comparing design trends to actual usability in this research means that we will examine if there is any actual underlying data that supports the trend from a usability perspective. This can have two outcomes: either the trend has grown because it more closely caters to how users use the respective products or the trend is a by-product from how designs were previously created. One example of this is that we load more information than necessary on to a page because we have previously done so. The reason we started doing this was due to slow internet speeds which lead to large loading times when clicking through a page. As such, now, even if the internet speed is quick and we do not have to load all information to a page we still do it since both users and developers have become accustomed to this pattern.

## **2.14 Culture and Usability**

## **2.15 Great Firewall of China**

The Great Firewall of China (GFC) is a combination of laws and technologies the Chinese government uses to domestically regulate the internet. Examples of services blocked by the GFC are Google, Facebook, and Youtube. The GFC also artificially causes traffic from abroad to be significantly slower than applications hosted in China. Hosting an application on a server in China requires a specific IPC license from the Chinese government and getting one is a long and slow bureaucratic process. The sort of algorithms that are used by GFC are largely unknown and can be challenging to circumvent.

## 2.16 Asynchronous

Asynchronous programming refers to the task of making several data processors run in parallel to each other usually without impacting one another. Asynchronous parallel processes are often called threads. One example of this would be one thread working on reacting to a user's request and supplying that user with the correct information. Simultaneously, another thread, not visible to the user, is saving all the user's actions and sending them to a server. (find a source)

## 2.17 AWS - Amazon Web Services

Amazon Web Services (AWS) is the world's largest provider of web-hosting. Amazon allows their customers to easily host applications globally and the company provides several features to assist their customers with this task. (cite to amazon here and all below)

### 2.17.1 EC2

EC2 (Elastic Cloud Compute) is a basic web server service that AWS offers. EC2 allows customers to set up a virtual server with different amounts of CPU, Memory and etc. These servers can be set up on several AWS locations across the world. This server can be customised to run an operating system of the customer's choice, the most common of which are Linux and Windows.

### 2.17.2 Auto scaling

Auto scaling is a feature provided by AWS that automatically scales up the server in case of increased traffic. This means if a application has a large amount of traffic on a server the auto scaling functionality creates an extra server that can handle user requests. Auto scaling also allows for automatic scale down in case of low traffic.

### 2.17.3 Load balancing

Load balancing is a feature from AWS that automatically balances the load of the EC2 instances. If a user has three EC2 instances, the load balancing will make sure that the workload is shared by all EC2 instances. This helps to prevent one instance from overloading.

### 2.17.4 RDS

Relational database service (RDS) is a database service provided by AWS. RDS lets customers set up a database of their choice and host it on AWS servers. Customers can set this database up on several locations across the world and configure it to suit their application.

### 2.17.5 S3

S3 is an AWS feature that allows for object storage in the cloud. S3 allows the user to store anything he deems fit - this can be everything from files and Images to code repositories. Images that are used on websites can be stored on S3 and then downloaded to the website when the user opens it, this is a common way to handle images in websites and applications.

### **2.17.6 Elastic Beanstalk**

Elastic Beanstalk also called EB is a feature provided by AWS that automatically sets up a instance complete environment with auto scaling, load balancing, Relational database and EC2 instances.

## **2.18 React-Redux**

React is a front-end JavaScript library developed by Facebook. React is based on the user building and reusing components. This allows for very structured and highly scalable code.

Handling data-flow in a react application can be very tricky, this is where redux comes in. Redux is a JavaScript library that allows for structuring and handling of a web application's data flow in a structured way. React and Redux are so commonly used together that libraries combining them have been made. React-Redux is the most popular use of these libraries and they work very well together to allow scalable and reusable code.

### **2.18.1 Redux-saga**

referense(<https://redux-saga.js.org/docs/introduction/> and <https://github.com/redux-saga/redux-saga>) Redux-saga is a javascript library that is made to handle a applications asynchronous tasks. Redux-sagas is often used for data feching and posting. It can also be used for other asyncronius tasks. Sagas handle asynchronous tasks without the user getting impacted at all by what goes on in the background.

## **2.19 MySql database**

MySql is a version of the database query language SQL. SQL has been used since 1981 and is used to set-up, save and get information from a database. MySql is free to use and has a public license. Mysql is a language that is both simple to use and quite powerful. Setting up inputting and getting data from an SQL database can be done through only a few lines of code.

## **2.20 API**

Api (application programming interface) is a interface between the front-end and server. A api allows the application to communicate with functions and servers outside the internal environment. Examples of these are databases, other servers and other api's. An api allows for clearer communication between different actors on the web.

**2.21 Statistical significance**

**2.22 T-plot (whatever it's called)**

**2.23 Null hypothesis**

**2.24 P value**

**2.25 waterfall**



## Chapter 3

# Methodology

This chapter aims to present the methodology and layout used in this report to answer the project questions defined in the introduction of this report. Explanation for the layout will be described to clarify the reasoning behind the structure of this paper.

### 3.1 Structure

This project followed a waterfall based approach where each smaller element in the process was done iteratively. The waterfall based approach suited this project since each step had to be completely finished before moving on to the next part. Each one of these steps, on the other hand, followed a more iterative agile process. One example is the development part of the project, this part could not start until the high-fi was done and tested and the analysis/launch could not be done since the test had to be the same for each user. If any content update was done to the test after launching it all previous results would be invalid. The development process itself was done iteratively, on the other hand, a first alpha version of the test was created and then tested on one or two users (these results were not used in the finished analysis). Then based on user feedback and bugs found the test was improved and then tested again until a satisfied product could be launched.

(figure her with phase 1 to phase 5)

The phases that can be seen in the figure (fig....) represent the different steps of the work process. Each new phase was dependent on the results of the last phase and at the end of each phase what was needed to be done and used in the next phase was decided. Since each phase can be seen as a smaller project they are all divided into a separate chapter in this thesis. Each chapter explains the method used during that phase, what results where found. The validity and relevance of the results are discussed. Lastly, the conclusion explains what was changed were implemented and why. Also what information that was selected for the next phase and how that influences it is explained.

Following the Phase chapters the results of the test are shown in the "Results" chapter, this includes numbers, graphs and calculations done. These results are then discussed in the following chapter "Discussion". We will then try to answer the goal questions stated at the start of this report (ref to that) in the "Conclusion" chapter. What limitations exist for this conclusion and future research necessary will also be discussed in this chapter.



## Chapter 4

# Phase 1 - Investigation

The aim of the investigation phase is to obtain a more nuanced understanding regarding the differences in perception and navigation of western versus Chinese websites. This information will facilitate the decision making process concerning which features to keep, which features need to be analysed, and what usability metrics should be implemented in the study.

### 4.1 Method

As an initial step, Chinese websites along with their western equivalents were identified and curated. After obtaining a corpus of websites from China and western countries (e.g., United Kingdom), the key design differences between these respective sites were documented. Once the primary design variances were explored, this information was used to decide which design patterns should be tested in the study. Finally, the specific metrics to measure the results of these different designs were concluded.

### 4.2 Results

#### 4.3 Chinese vs Western websites comparison

In reviewing the websites, it was evident that Chinese pages differed significantly from western counterparts. The differences between sites extend from the look and feel to the UX design. A few of China's most popular browsing sites will be analysed and compared to similar western counterparts to further investigate these design distinctions.

##### 4.3.1 QQ

QQ is one of the most visited websites in China (see fig 4.1). [12] [11] QQ, like many other Chinese websites, does not focus on one thing but has multiple different functions. Some of the functions that QQ supports are: instant messaging, online games, music, shopping, microblogging, news, movies, group chat software, and etc. On the QQ homepage, users are greeted by the site's news page, which is highly information dense. Without hovering over any content on a standard computer screen, there are roughly 147 clickable elements. In contrast, BBC's homepage [4], which is considered fairly information dense by western standards, has only 48 clickable elements on its homepage. This means that with only counting clickable elements, QQ is over 3 times more information dense than BBC.



FIGURE 4.1: QQ's homepage which provide which is mostly used for news.

One element that is notably common on Chinese websites, including QQ, is the menu bar design (see fig 4.2). On the QQ page, the menu bar contains two rows with a total of 40 clickable options - this format of menus is typical in China and is shared by multiple other Chinese sites.



FIGURE 4.2: A close-up of the menu bar used at QQ.

### 4.3.2 BBC

### 4.3.3 Taobao and Ebay

Taobao, which provides services akin to America's Ebay, is one of the world's biggest e-commerce platforms. Both Taobao and Ebay are shopping websites where users can purchase nearly any product they need, both from retailers and from other consumers. However, although these sites are similar in service, the design and user-experience focus on these sites differ significantly. Ebay, for instance, boasts a sleek design, employing dark-themed colors and contains only 20 clickable elements on the home page (see fig:4.3). Conversely, the Taobao page contains more colors, employs a brighter theme, and incorporates more clickable elements compared to its western counterpart. Another notable distinction between the websites is that Ebay has an expanding menu bar containing roughly 6-10 clickable elements while Taobao's menu contains much more (see fig:4.4).

In examining the Chinese version of Taobao, the difference in information density is evident (see fig:4.5). The main page, for example, hosts roughly 49 clickable elements. Additionally, the menu items on the screen's right side is expandable, displaying between 55 to 88 clickable links and elements see fig:4.6). This amounts to about eight times the amount of clickable elements on Ebay. Further, while Taobao employs strong color themes (e.g., red, purple, orange, and blue), Ebay generally employs muted colors (e.g., grey) allowing for the products to be the center of focus.

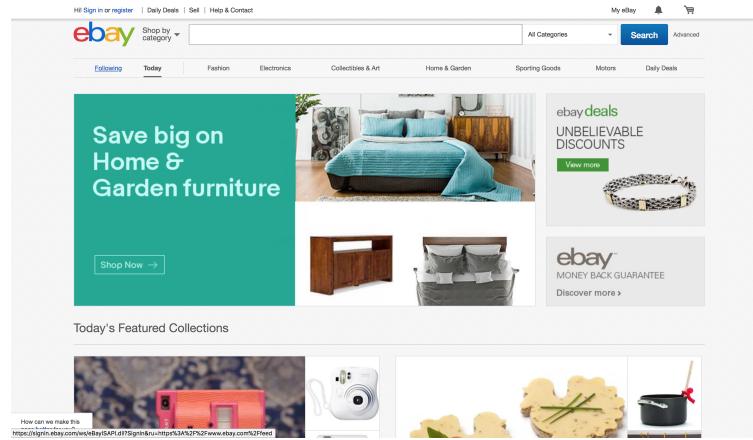


FIGURE 4.3: Ebay a popular American online shopping site

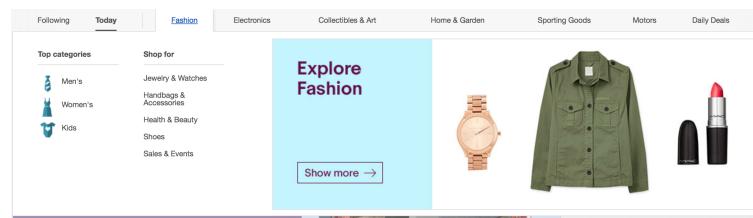


FIGURE 4.4: Expanding the menu on Ebay.

#### 4.3.4 Analyses of Ctrip

Interestingly, the layout on many Chinese websites change significantly when the language is changed. For instance, the layout of Ctrip, a common travel site used for booking hotels and flights in China, becomes very different when users select English for the site (see fig: 4.7 versus for the Chinese version (see fig: 4.8 for English version). With the exception of the brand and name of the website, it is difficult to tell that it is actually the same website .

The main difference documented between the sites is content density. The Chinese version of Ctrip has a lot more content in a small area compared to the English-translated version of the site. Counting clickable elements without hovering over anything, 40 clickable elements were found on the Chinese version compared to only 26 clickable elements on the English version. When using the Chinese site, all links open a separate window instead of a second menu or tab - a common phenomena found on Chinese sites.

(!!!!!!Discussion?????)



FIGURE 4.5: Taobao a popular Chinese online shopping site

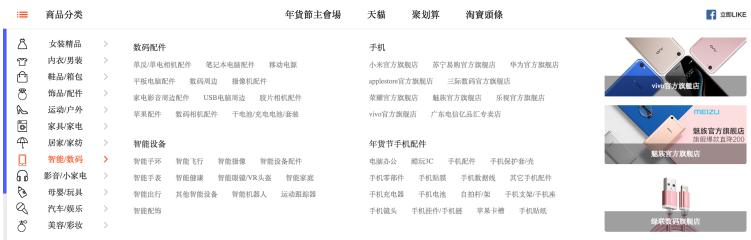


FIGURE 4.6: Expanding the menu on Taobao.

## 4.4 Conclusion Phase 1

### 4.4.1 Common Chinese design that differs from western design

Looking through the websites we can identify several design features (outside of the language differences) that differ in Chinese and western websites.

These are:

- High information density
- Colors
- Ad content
- Navigation

The main factor of variance across the sites is information density. Chinese websites have significantly higher information density compared to their western counterparts. As such, information density is one feature that will be closely examined in this research. Colors and navigation features will be explored, but not prioritized. These aforementioned features will be included to aid in understanding the look and feel of the sites, rather than being the primary objectives of investigation. Additionally, since Chinese sites contain a higher ratio of ad content compared to western sites, advertising will be another feature explored in this study. There are several theories accounting for why Chinese sites are more information dense. Some of these hypotheses are: cultural/trends, historical, holistic vs analytic perceptions

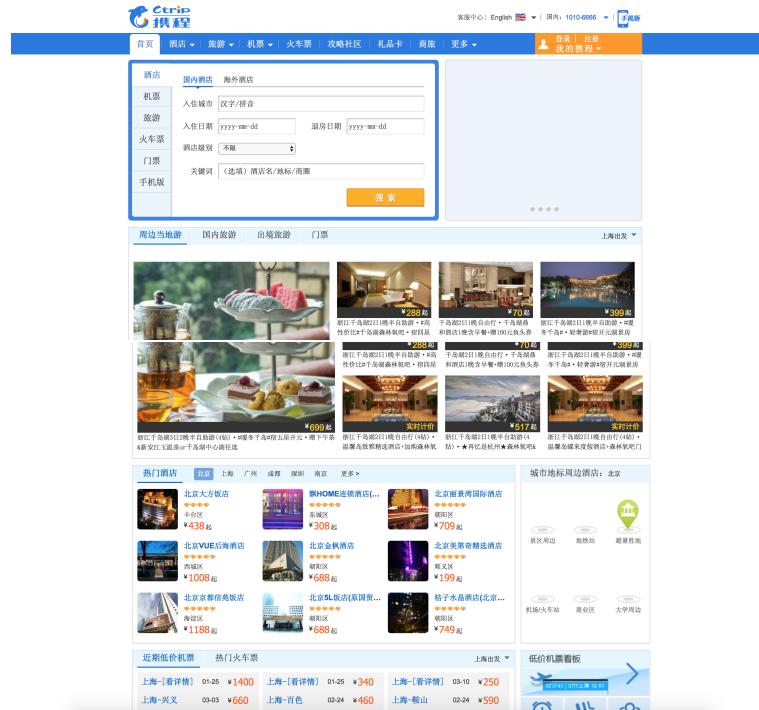


FIGURE 4.7: The Chinese version of the travel website Ctrip.

(ref or cite..) and language. Due to limitations concerning Chinese language and knowledge of the history and culture, we will mainly examine trends and perception.

For the purposes of this research, different interfaces were created for the purpose of investigating trends and perception differences between sites. One page is western inspired and another was created with inspiration from Chinese designs. To ensure that the interfaces maintain authentic Chinese and western designs, professional UX-designers from Sweden and China assisted in the development of some prototypes. These prototypes were then tested on both users with Swedish and Chinese heritages respectively. Finally, working interfaces, cable of measuring what actions users take in responding to certain tasks, was developed given the feedback from these prototypes. Main measurements that will be used are task-success, time-on-task and a modified System usability scale. [1]

Four interfaces will be created, with two following a western design and the other two using a Chinese layout. The first interface takes inspiration from the QQ and BBC news site home pages. The goal of implementing these interfaces is to explore how fluidly users from different cultural backgrounds can navigate sites containing high information density (e.g., copious amounts of images and texts). Both interfaces contain roughly equivalent levels of material and clickable elements; the primary difference is that the western site will be longer, forcing users to scroll down the page. Additionally, some of the information will be mapped in sub-menus using natural mapping for the western site [8]. Conversely, the Chinese inspired site will provide most of the material directly on the screen for users to view without any nested menus.

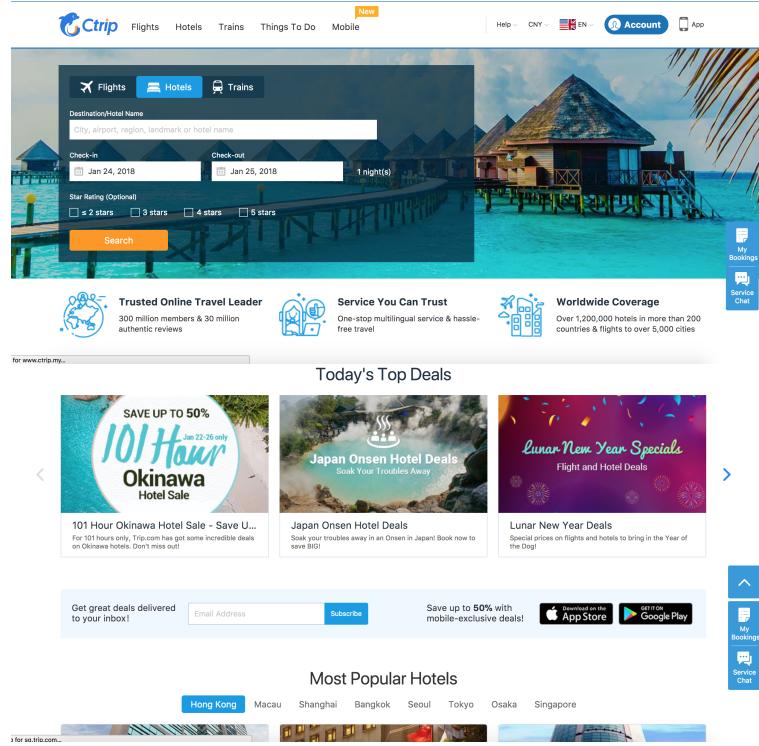


FIGURE 4.8: The English version of the travel website Ctrip.

### Categorization of Data

Choosing the ux questions: In [7] has shown that perception differs in western and eastern cultures. [3] further indicates that this perception difference holds true in the case of people observing websites. Specifically, users using analytical processing follow the F-shaped pattern when browsing sites [10]. Holistic thinkers, conversely, do not follow the F-shaped pattern when browsing through a website. [3] In light of these past studies, it will be interesting to explore how these perception differences will influence users' abilities to navigate and perceive web pages. To investigate this question, we select elements both in accordance to the F-shaped pattern and elements outside of this pattern. By testing the performance on both analytical and holistic thinkers, we should get an indication of the differences and how well people follow the F-shaped pattern when looking for specific elements. The test will be unsupervised, meaning that we will have to get a larger test audience in order to obtain significant results. To test variances in perception, we will create tests for the sites BBC and QQ. On these pages, we will ask test subjects to find elements following an F-shaped pattern and elements not following this pattern. F-shaped pattern vs non F-shaped ([3]) Information density

## Chapter 5

# Phase 2 - Prototyping

The goal of Phase 2 is to quickly create prototypes for our design that can be used in a pilot test to ensure that the real test will work as intended before it is created.

### 5.1 Method

The Low-fi prototype was a simple sketch made with paper and pen. Since the prototype are modelled after an existing website this prototype is focused on the parts needed for testing the page and not the design of the web pages themselves. The low-fi prototype was then discussed with a UX-expert and improved upon.

Two High-fi prototypes was made from the online news site BBC [4] and QQ [5]. These prototypes were directly modelled from the websites and then the corresponding logos were removed. Both the high-fi prototypes are then translated to English respectively Chinese using Google translate. This translated text was then looked over by the Tetra pak supervisor who is a native Chinese speaker to ensure that the translation was correct. Test questions and tasks was created for both the BBC and the QQ site in English. These questions were also translated to Chinese for the Chinese users.

A questionnaire modelled after the Sus (system usability scale) was then created. The purpose of this questionnaire is to gage what the user feel about using the websites. Many of the original questions did not suit this purpose and was therefore either removed or changed.

### 5.2 Results

#### 5.2.1 Low-fi Prototype

The Low-fi Prototype can be seen in the following figure (fig:.....). As can bee seen in the images only the testing part and not the design of the website was created. The improvements from this prototype can be seen in the high-fi prototype.

#### 5.2.2 High-fi Prototype

The High-fi prototypes can be seen in the following figures: QQ (CITE to QQ image), BBC (SITE TO BBC IMAGE). The test parts can be seen in the following image(ref to that figure)

### 5.2.3 Sus

The Sus inspired questionnaire contained the following questions:

1. I liked the design of the site.
2. The design of this site was similar to other news sites.
3. I think that I would like to use this site frequently.
4. I found the site unnecessarily complex.
5. I thought the site was easy to use.
6. I found the various functions in this site were well integrated.
7. I thought there was too much inconsistency in this site.
8. I would imagine that most people would learn to use this site very quickly.
9. I found the site very cumbersome to use.
10. I felt very confident using the site.
11. I thought that the amount of information on this site was.

For each of these questions the user could give it a rating from 1 "Strongly disagree" to 5 "Strongly agree". The last question the user instead got the choices 1 "Too sparse" to 5 "Too much".

## 5.3 Discussion

The main purpose of creating and testing these high-fi prototypes was to see how well the site would work when translating to another language. The site got a very different look after being translated, partly because the Chinese language produces smaller sentences. The Chinese characters also give a very different impression since the design of the characters and general lack of fonts when using. The Chinese QQ site became quite a bit longer with the translated English text. And many sentences had to be spread out over two rows. For the translations made from Chinese to English, many news had to be slightly changed to make logical sense. The translator handled English to Chinese quite a lot better and only small changes needed to be done. These changes in between version should not have any effect on the testing results since what is being tested are how the users handle information density and placement not the actual content of the news.

The questions/tasks for the users to perform on the followed a simple pattern. Roughly half of the information the user was asked to find was located inside the F-shaped pattern and the other half outside the pattern. Some questions were selected to test the different menu-bars as well. The questions that were created can be seen in the pilot study (Ref pilot study).

## 5.4 Conclusion

To make sure the test will work and to see if we will get any sort of interesting result from the real test before programming the websites a pilot study using the high-fi prototype was conducted [6](#)).

## Chapter 6

# Pilot study

The goal of this pilot study is to test if the hypnosis will have any chance of giving any significant results. The pilot study will also test if the tasks in the study actually answers what we want to find out. The pilot study will also give a clearer indication of the limitations of these tests.

### 6.1 Method

The pilot study was done by showing the test people the developed sketch prototype. Using this sketch prototype the tester sat next to the user and asked them to perform the tasks written down on a piece of paper (In Chinese for the Chinese users and in English for the Western users). First the people got a minute to look around the page to get a quick feel for the layout of the site. Then a question was showed to the user and a timer was started at the same time. When the test subject found the requested image or text they indicated that they had found the information and the timer was then stopped. This was repeated until all the tasks were fulfilled.

### 6.2 Results

The users were asked to perform the following tasks:

#### English BBC Questions:

1. Click the news about ivory stabbing
2. Click on the Korean men beauty revolution
3. Click on the news about the freed samung heir
4. Click on the news about Zuma refusing to step down.
5. Click on the news that has to do with an angry sports coach.
6. Click on the long read article about the catholic priest father
7. Click on the video about cooking with strangers
8. Click on the video that has to do with Indonesia
9. Via the top menu go to the new phones site
10. Via the top menu go to US politics
11. Via the top menu go to news about the stock market

### English QQ Questions:

1. Click on the following news: One hundred Hongkong staff more than half hiding in the United States and Canada
2. Click on the following news: Fishermen are no longer allowed to bring their own baits.
3. Click on the following news: Russian fighter pilots last words before blowing himself up with a grenade "For my brothers"
4. Click the following news: True beauty don't fear wrinkles
5. Click on the video with a Chimpanzee
6. Click on the video below: Premier League - Liverpool 2-2
7. Click on the skyscraper picture
8. Click on the news below: Dow plunge near 700 on Friday what triggered it?
9. Choose from the following menu items: News
10. Choose from the following menu items: Health
11. Choose from the following menu items: Sports
12. Choose from the following menu items: Digital

The BBC pilot study resulted in the following results:

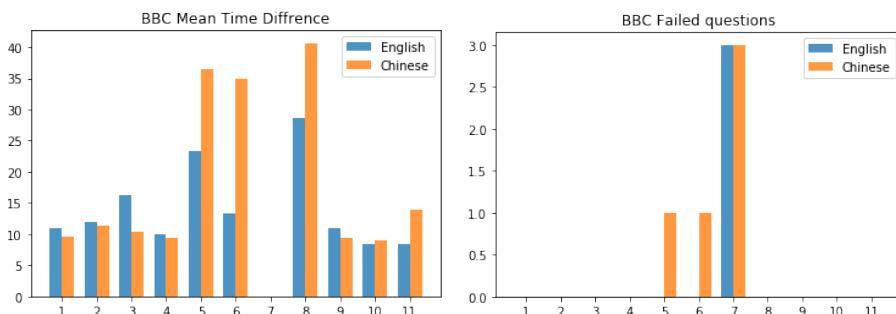


FIGURE 6.1: Results from the pilot study for the BBC inspired news prototype.

The QQ pilot study resulted in the following mean results:

### 6.3 Discussion

Doing this study provided a lot of relevant information some of the main problems with the test that was identified where that some of the news where repeated on several places of the site this made some tasks irrelevant since the news could be located at several different locations. Some of the questions seemed badly translated as well. For example the question of the sports coach seemed to confuse many of the Chinese users. Also the questions regarding finding images on the qq site did not

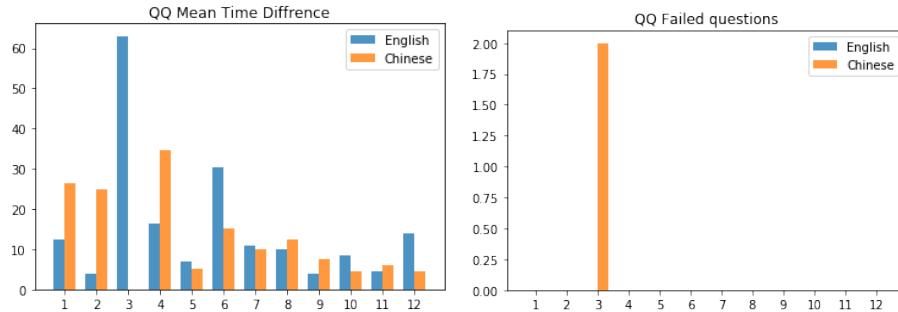


FIGURE 6.2: Results from the pilot study for the QQ inspired news prototype.

provide with any meaningful result this since QQ has very few pictures and therefore they did not check how well the user preformed in information dense sites. Another thing that was noticed during the test were how much the positioning of the questions were. The users seem to start their new search pattern from the point of the last task. This means that subjects who were asked to find new information all quickly found news closely located to the previous task. This needs to be kept in mind when designing the next set of questions, it might also be interesting to keep this in mind when analysing the results of the larger study.

We can see the measurements from the study in 6.1 and 6.2. Since the goal of the pilot study was to try out if the concept for the real study works we did not have enough participants for this data to have any statistical significance. As mention above the goal of the study was to find problems with the questions, translation and ux. According to (ref vem det nu var) we only need about 5 participants to find the majority of the user experience problems. But if we want this survey to be statistical significant when actually measuring time differences we would need 20 participants on each individual page. This would mean a total of 80 participants.

One thing that was noticed that were missing from a usability perspective is asking the user to perform actual tasks. All of the questions where focused on finding information. We would also to some extent test how the users deal with actual tasks and functions that are present on the different sites. One common task that is used on news based sites is giving feedback to the hosts and following the sites on social media.

## 6.4 Conclusion

Many questions will be changed to better be able to get results for the projects, also both the sites will have questions with the same structure. Both sites will have 16 tasks to perform. Four of the tasks will be about the menu-bar, four of the tasks will be functional, four of the tasks will be about finding precisely described news titles and lastly 4 of the tasks will be about finding more general described news. About half of the tasks will be in the F-shaped pattern view sight. The other half of the questions will be located to the right-hand and central side of the website. Finally the sites will be designed so the content of both sites will be as similar to each other as possible.

Some functionality will be added to the prototype such as giving feedback and also following on social media. This will be done according to standards as can be seen in 4. A menu with the option to give feedback and follow on social media will be added to the right hand side on the Chinese pages respectively on the bottom of the page for the western site.

The new questions selected for bbc are the following: .....

The questions selected for qq are the following: .....

## Chapter 7

# Phase 3 - Building the Interfaces

The goal for this phase is to develop the beta-test, test it, update according to feedback and deploy it. After the web test has been deployed it will be accessible. Several different technologies will be used and described in this chapter to make all of this possible.

## 7.1 Method

To be able to perform the test on users all over the world without actually having to be there a web based test had to be constructed. The test was made using several different technologies and hosted on aws.

Several things had to be taken into consideration such as: slower network in china, possibility of web connection getting interrupted, measuring correct behaviours, making sure a completable devices was used for the test (mobile device would not at all test the same thing).

### 7.1.1 Front-End

The most important front-end technology on this website are React, Redux and Redux-Sagas. These three libraries create most of the functionality in website and they work very closely together. With React we show the user what we want him or her to see. All the users behaviours are stored in Redux (imagine a database for the browser), then depending on the updates in Redux, React appropriately up dates the information the users see. Some of the actions a user does triggers a Saga (Example: Pressing the finish button). That Saga then makes a asynchronous call to our API and send over the data stored in Redux to our mysql database hosted on AWS in Seoul.

Our front-end consist of four different pages. Homepage, bbc, qq, sus and done. The names of these pages are taken from the material that inspired them. The bbc site is not a actual bbc site but is named so since it is inspired from the bbc website. These namings is not something the users see and therefore does not affect them it's only to make it clear what page that is currently being disused. The flow of the test is as follows: The user starts at the Homepage, depending on the last test made by someone the user will either end up at the bbc page or the qq page. Depending on the language selected by this user they will see the page in the selected language. After finishing the bbc or qq test the user will be taken to the questionnaire on the sus page. After this is completed the user will arrive at the done page which contain a simple message thanking the user for their participation and provide my contact information if they have any questions.

## Homepage

The homepage is the first page the user will see. This page is responsible for gathering information needed to decide how the rest of the test will be set-up. The homepage will start by asking the user if they want to do the test in Chinese or English. The test will then proceed to give the user information about the test in their chosen language. The web page will then query the database to check which of the sites that have the least number of tests done (bbc or qq). The user will then be see a description of the test in the selected language (see 7.1). After the user finishes reading the description and press "start" the site will start the test.

Welcome please answer the following questions to start.

Language  
English

Gender  
Female

Age  
25-34 years old

**Continue**

FIGURE 7.1: Image of the first page the user is greeted with.

Hi and thanks for participating in the following test.

My name is Marcus and this test is a part of my master thesis research, which explores cross-cultural website usability. The test will take roughly 5-10 minutes and the format is as follows: Once the test finished loading, you will be shown a news site. On this news site, you will be asked to find different articles and images. In some instances, you will be asked to directly click on an item based on its description. In other cases, a more general description will be given. After clicking on the items you are asked to find, please click next to proceed. If you are unable to complete a certain task, you can skip it. All solutions to the required tasks can be found on the website, so please aim to complete the task before skipping it. After the 13 tasks, you will be asked a couple of general questions on the site you used.

IMPORTANT: Please avoid using search tools since this will make your results meaningless. Also please try to do the test without interruptions since your actions and click patterns will be timed and recorded. Use a computer for this test it is not meant to be done on a phone! Avoid using the back button, you can not redo a task if you did a mistake that is fine just continue with the test.

**Start**

嗨，感谢您参加以下测试。

我的名字是马库斯，这个测试是我的硕士论文研究的一部分。它探索了跨文化网站的可用性。测试将花费大约5-10分钟。格式如下：一旦测试完成加载，您将看到一个新闻网站。在这个新闻网站上，您会被要求找到不同的文章和图像。在某些情况下，系统会要求您根据描述直接点击某个项目。在其他情况下，将给出更一般的描述。点击您要查找的项目后，请点击下一步继续。如果您无法完成某个任务，则可以跳过它。所有必要的任务的解决方案都可以在网站上找到。所以请在通过之前完成任务。完成13个任务后，您会在您使用的网站上询问几个常见问题。

重要提示：请避免使用搜索工具，因为这会使结果变得毫无意义。此外，请尝试不间断地进行测试，因为您的操作和点击模式将被定时和记录。使用电脑进行这项测试并不意味着要在手机上完成！避免使用后退按钮，如果你犯了一个错误，那么你就不能重做任务，只要继续测试。

**开始**

FIGURE 7.2: Description in chinese and english.

## BBC and QQ

Both the bbc and qq inspired sites have the same basic layout. When the user arrives at the page a pop-up will appear with a loading bar, this is to make sure the user can't start the test until all the images has been loaded from the server. When all the images have been loaded the user will be able to start the test (see ref....).

All the news in this test has been translated so they have both the English and Chinese versions available depending on what language the user selected from the Homepage. Once the user starts the test a timer starts, the user is not able to see this timer. Each click the user does is recorded, the time it takes to complete the task and if the user gets the correct task or not. The number of questions the user have left to complete is also shown. The questions and what the user has most recently clicked is shown in a bar at the bottom of the screen (see 7.3). Once the user finishes the test their answers are sent to the database via the API and they are redirected to the SUS site.

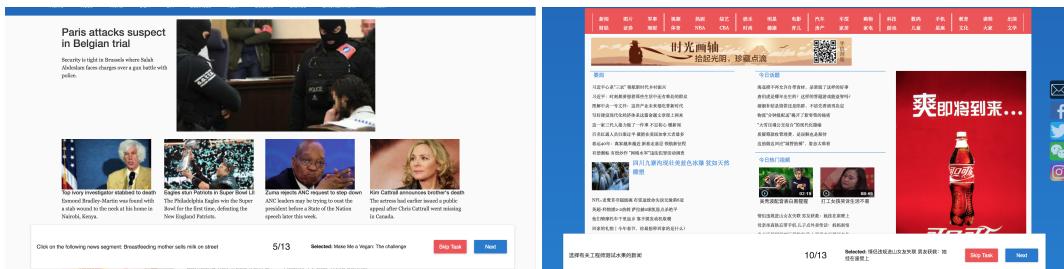


FIGURE 7.3: A example of what it might look for a user when testing bbc and qq inspired websites.

## SUS

This site consists of the before mentioned predefined questions designed to get a understanding for what the user fleet about the website, test and design (See fig 7.6). Once the user has answered all the questions and pressed finish their answers will be sent to the database via the api. The user will then be rerouted to the done site where they will see a message thanking them for participating in the test (See fig 7.7).

### 7.1.2 Database

The database consists of five diffrent tables: Main, Actions, Questions, Sus and QuestionTexts. (See fig: 7.8 for figure of the full database)

The Main mainly is used to identify the user where each user has a unique row. The table has four columns Id, Site, Language and Age. The id in the main table is the main id to identify a user. This same id can be found for each user in all other tables except QuestionTexts.

The Questions table contain all the answers from the users, the table has seven columns: Id, MainId, QuestionId, Correct, StartTime, EndTime, Correct, TotalTime.



FIGURE 7.4: The full view of QQ site in english and chinese

MainId and QuestionId is foregin keys referencing the ids in the Main and QuestionsTexts tables. Each row in the Question table contain a answer from a user.

The Action table contain all the click-actions a user did per question. The table contain seven columns: Id, QuestionsId, PosX, PosY, ScreenWidth, ScreenHeight, RelativeTime. Where QuestionsId is a foregin key referencing the Id in Questions. Each row in the Action table contain a action made by the user.

The Sus table simply contains all the users answers to the Sus questions. The QuestionTexs table contain all the questions the user are asked in the test

### 7.1.3 Api

A express Api was set up to handle communication between the front-end and database. The Api takes the information that is sent from the users front-end code and transform it into a format that works for the sql database. The Api then quires the database and insert the new data into the database tables.

### 7.1.4 Hosting AWS

To host this app on AWS we used the feature called "Elastic Beanstalk" also called eb. Eb allowed us to easily launch a application that automatically set up a EC2 instance, auto scaling, load-balancing, RDS. The services was set up in Seoul. This to decrease

the loading time for China as much as possible. Since Seoul also have very good network connections to the rest of the world this does not increase the loading time in Europe and the US that much. A lot of time had to be spent changing parts of the code so it would run on AWS servers.

### 7.1.5 Beta-tests

Once a working version of the test was created. A beta test was made to find possible bugs in code and improve user-experience in terms of font-size and design of the testing parts. The beta-tests where made in the form of letting users try to finish the test while It was supervised. Notes where taken about possible misunderstandings, bugs and improvements that could be made to the test. Some examples of notes that was taken during the beta tests can be seen below.

1. Make selected bigger so the user can easier see what they have done.
2. Should we log scrolling?
3. Some correct question gets logged as incorrect in database in-spite of being correct.
4. Waiting for sus site is very slow. Is it waiting for the database?
5. Left top-side of qq site is too small, because of commercial?
6. Wrong spelling in some news.
7. Skip task not working.
8. Some correct question gets loged as incorrect in database in-spite of being correct.
9. Change so the size of the page is constant no matter the screen size. (Looked very bad on a big screen right now.)
10. Start time not working correctly on some questions.
11. Remove video from questions, does not give any relevant information.

The beta was tested on about ten people where six did the English version of the test and four the Chinese version. After about eight tests almost no new information about usability problems and bugs where found so it was concluded to finish the beta testing and launch the test.

### 7.1.6 Launch

The launch of the test went fairly quickly with AWS. During the launch the performance of the site was monitored closely and we could thereby see that loading times increased when several people used the site at the same time and not all results where logged in the database. It was quickly concluded this was because a problem with the database connection from the api and within the matter of minutes this bug was fixed and the site was updated. It can be estimated that about 4-5 test results where lost due to this mistake.

### 7.1.7 How the test was conducted

it was sent out so only one test person did the test once. No repeats of the test where made

## 7.2 Results

(CHANGE) We received quite a few responses from both English and Chinese users. In total we revived about 99 replies from people who did the test. 40 of these where from Chinese users and 59 from English speaking users. Of these users 61 where male and 38 female.

The majority of the test subjects are students studying at university. Most of the english speaking students are from Lunds University and the majority of the Chinese speakers are from xxxxx university in China. The rest of the test subjects are a mix of people from the Swedish and Chinese Tetra pak offices. The age of the test subjects are quite similar as can be seen in the graph below (/ref here for graph!).

(Bild från age grafen)

## 7.3 Discussion

The programing is the largest and most time consuming part of this thesis and there were several requirents of the code for the tests results to be useful. (OBS BORDE DHA MED ALLA REQUIREMTENTS NÅGONSTANTS. The requirements from the code can be seen in (REF TO REQ HERE). On top of previously decided requirements the following where also added when it was realised that they where needed:

1. Users are not allowed to use ctrl-search
2. What site the user will test on should be controlled, this so we receive equal amount of tests for both sites.
- 3.

The results are from the raw data. This means that the data will have to be cleaned before able to be used. Some examples of what have to be removed are:

1. Tests done on Phone
2. Questions where the user has left the test.
3. Tests where the user only skipped through all the questions

## 7.4 Conclusion

Vad som behövde ändras efter beta, samt panik upddatering på mysql databasen, hur vissa trots text försökte göra på mobil

**News**

巴黎攻击怀疑在比利时受审  
比利时上诉法院裁定，将对涉嫌参与2015年巴黎恐袭的萨拉赫·阿卜杜勒-阿齐兹进行审判。

巴黎袭击案嫌犯在比利时受审  
当地时间1月13日，涉嫌参与2015年巴黎恐袭的萨拉赫·阿卜杜勒-阿齐兹在比利时上诉法院受审。他被指控犯有谋杀、蓄意造成严重危险和违反反恐法等罪名。

1/13 Selected: 法国的ANZ要求下台  
Stop Task Next

国际奥委会对俄罗斯的禁令取消  
盐湖城的高铁列车“错误的轨道上”  
Weymo v Uber: 谁做了什么？ 英国将退出关税同盟，10项坚持

作为承办人的生活... 17岁  
Meet the autistic models storming the catwalk  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

韩国男人正在开始一场美容革命  
选手们在比赛中表演  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

全文  
从断脖子到牛津的罗兹奖学金  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

长阅读  
大部分阅读  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

在世界各地  
寻求像疾病一样治愈衰老  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

运动  
周一的足球追赶  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

新闻  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

巴黎袭击案嫌犯在比利时受审  
比利时上诉法院裁定，将对涉嫌参与2015年巴黎恐袭的萨拉赫·阿卜杜勒-阿齐兹进行审判。

巴黎袭击案嫌犯在比利时受审  
当地时间1月13日，涉嫌参与2015年巴黎恐袭的萨拉赫·阿卜杜勒-阿齐兹在比利时上诉法院受审。他被指控犯有谋杀、蓄意造成严重危险和违反反恐法等罪名。

1/13 Selected: 法国的ANZ要求下台  
Stop Task Next

国际奥委会对俄罗斯的禁令取消  
盐湖城的高铁列车“错误的轨道上”  
Weymo v Uber: 谁做了什么？ 英国将退出关税同盟，10项坚持

作为承办人的生活... 17岁  
Meet the autistic models storming the catwalk  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

韩国男人正在开始一场美容革命  
选手们在比赛中表演  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

全文  
从断脖子到牛津的罗兹奖学金  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

长阅读  
大部分阅读  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

在世界各地  
寻求像疾病一样治愈衰老  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

运动  
周一的足球追赶  
为什么我们有飞行员短缺?  
为什么我们有飞行员短缺?

新闻  
为什么我们有飞行员短缺?

Paris attacks suspect in Belgian trial  
Sorcery is right in Brussels where Salih Abdallah faces charges over a gas battle with police.

Top story: Kim Cattrall announces brother's death  
The actress had suffered a public outburst after Chris Cattrell went missing last year.

Click on the following news segment Broadsheet: mother sets milk on street  
5/13 Selected: Make Me a Vegan: The challenge  
Stop Task Next

Korea jail gives birth  
IOC disappointed Russian bars were tilted  
Crashed Amtrak train 'on wrong track'  
Waymo v Uber: Who stole UK will leave customs union, No 10 insists

Must See  
Life as an undertaker... aged 17  
Meet the autistic models storming the catwalk  
Why have we got a pilot shortage?  
Timberlake touches down at Super Bowl  
Dancing aims to indoctrinate a tech hub  
The flying man of the Winter Olympics

Most Watched  
1 Korean men are starting a beauty revolution  
2 Meet the autistic models storming the catwalk  
3 Prostate cancer symptoms explained  
4 Why have we got a pilot shortage?  
5 Life as an undertaker... aged 17

Full Story  
From a broken neck to a Rhodes Scholarship at Oxford  
Timberlake touches down at Super Bowl  
Five things about Paris attacks suspect: Salih Abdallah

Long Read  
The many risks of Jason Zuma  
My father, the Catholic priest who doesn't want to know me  
You're losing everything - but you don't understand me  
The Corrie McKeague story

Most Read  
1 Kim Cattrall announces brother's death  
2 Paris attacks suspect in Belgian trial  
3 Top Ivory investigator stabbed to death  
4 Snow disrupts travel as temperatures fall  
5 UK will leave customs union, No 10 insists  
6 The unwanted holiday homes owners can't give away  
7 Reality TV star Kyle Jenner gives birth  
8 Timberlake touches down at Super Bowl

Around The World  
The quest to cure ageing like a disease  
The need to paint Europe red  
The chameleon's size of an ant  
The hidden messages in social media  
Where a T-shirt can cost \$7,500  
China's last electric train

Sport  
Monday's football catch-up  
Angry Klopp times other fans penalty  
Italy 1-0 England  
Half of sportsmen face retirement  
NFL player killed by a suspected drug dealer  
Telepathic Ford and Fanta take partnership to new heights  
Garin Crooks' team of the week

Newsbeat  
Behind the job: The 17-year-old underdog  
Make Me a Vegan: The challenge  
Dad disappears suddenly after Monk Mill  
Tupper plays to own song in court

Find us here  
Email Facebook Twitter YouTube Instagram

Header stuff

I liked the design of the site / 我喜欢网站的设计

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

The design of this site was similar to other news sites / 这个网站的设计与其它新闻网站类似

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

I think that I would like to use this site frequently / 我认为我想经常使用这个网站

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

I thought the site was easy to use / 我认为该网站很容易使用

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

The design of this site was unusual to me / 这个网站的设计对我来说是不寻常的

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

I thought there was too much inconsistency in this site / 我认为这个网站有太多不一致的地方

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

I felt very confident using the site / 我对使用该网站非常有信心

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

I thought the material I was looking for was easy to find / 我认为我寻找的材料很容易找到

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

I found the site very cumbersome to use / 我发现该网站使用起来非常麻烦

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

I thought that the amount of information on this site was too sparse / 我认为这个网站上的信息量太少了

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

I felt overwhelmed using this site / 我感到不知所措地使用这个网站

Strongly Disagree / 非常反对    1    2    3    4    5   Strongly Agree / 非常同意

[Finish test](#)

FIGURE 7.6: The sus site

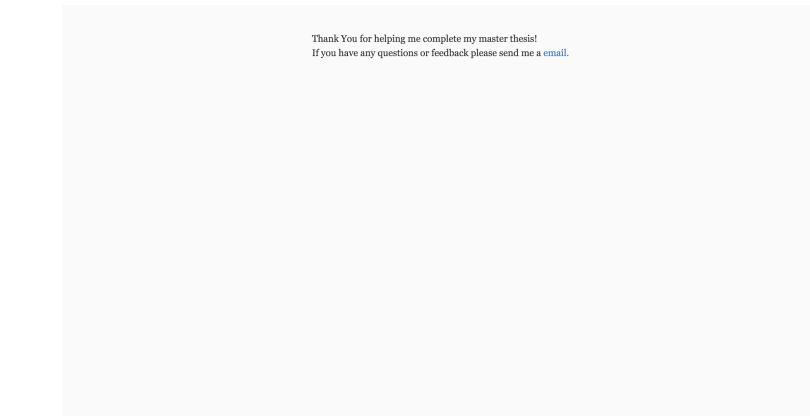


FIGURE 7.7: Last site the user is shown when they have finished the test.

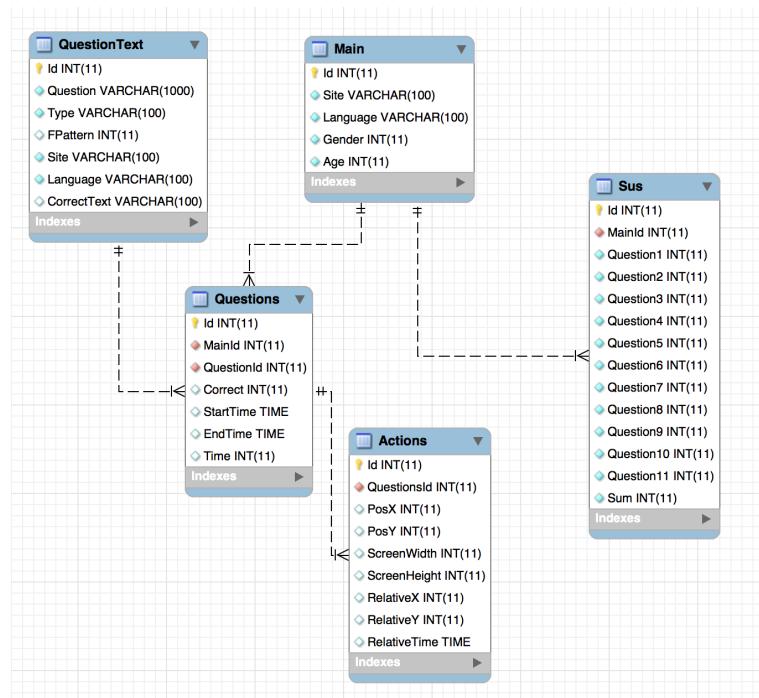


FIGURE 7.8: A EER schema of the mysql database. Yellow icons show the tables primary key, red the foreign keys and blue/white the attributes.



## Chapter 8

# Phase 4 - Analyzing Data

The goal with this phase is to use the language python combined with mysql quires to get the data from the database. Clean the data and then analyse the results and test it for statistical significance.

### 8.1 Method

The main technologies used for this phase was Python using several different libraries and mysql to querie the database in Seul, South Korea.

data gathering process: To gather the data from the MySQL database several queries were made with conditions that specified what specific data to be gathered. This data then loaded into a data frame in python. Eight different data frames were created. Four containing information about the user's actions on each question these were the following: English speaking BBC users, Chinese BBC users, English QQ and Chinese QQ users. Four other data frames with the same constraints were created but instead of containing the user's responses and times it took to answer the different questions, these contained the users Sus answers.

Once the data was gathered is was scanned for irregularities these were often either removed or replaced by a mean value as is commonly done in machine learning and other data mining/data analysis fields. The most obvious errors were the ones where the data had the wrong shape because of a bug. These were simply fixed or removed one example of this is one user who had twice the amount of answers to the questions with the exact same information. In that case, one of each row containing a duplicate was simply removed. Another type of faulty data where the user's complete input was removed was the cases where a user had skipped through all his/her questions. Resulting in all incorrect answers with times spent on each question close to zero, these users were simply removed another type that was removed were users who did the test from a mobile device. From this type of data cleaning, 16 users were removed (total users was calculated after these had been removed). Another type of data that needed to be cleaned where some questions where the users simply had an extremely high mean time of a question that was out of proportion to the rest of the mean times. This seemed to happen randomly and is likely due to a user leaving the test to do something else and then return. In these cases, a cap of 400 seconds where set and any question mean-time that was higher than that was removed. The 400-second cap was used because the largest normal average was around 100-200 seconds after that we only got a couple of odd outliers with times from 500 seconds and up. There were some smaller oddities that had to be handled as well but we will not go into these in detail in this report. The data was removed by two different ways, if a user had to be removed it was simply unselected in the

SQL query to the database. If on the other hand a value had to be modified or a single question result dropped this was done in the python script on the data frame.

Data analysis bbc/qq and t-testing on results

Analysis of sus and explanation that formula was made

Prata om hur python användes hur processen från att hämta datan till ett resultat gick till

### **8.1.1 Results**

Prata här om funktionerna som du kom fram till exempelvis med Sus. Allt som droppades lades till manipulerades...

### **8.1.2 Discussion**

Hur gick det? varför tolkades datan som den gjordes varför behövde vissa saker droppas etc... Varför valde du att göra som du gjorde med sus data. Hur valde du resultat för t-testing. Hur mycket kan du ha missat

## **8.2 Conclusion**

Är du nöjd med resultaten vad hade kunnat förbättras/göras om.

## Chapter 9

# Results

### 9.1 Meaning of results

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aliquam ultricies lacinia euismod. Nam tempus risus in dolor rhoncus in interdum enim tincidunt. Donec vel nunc neque. In condimentum ullamcorper quam non consequat. Fusce sagittis tempor feugiat. Fusce magna erat, molestie eu convallis ut, tempus sed arcu. Quisque molestie, ante a tincidunt ullamcorper, sapien enim dignissim lacus, in semper nibh erat lobortis purus. Integer dapibus ligula ac risus convallis pellentesque.

### 9.2 Conducting a non monitored test

#### 9.2.1 The good

#### 9.2.2 The Bad

#### 9.2.3 Subsection 2

Morbi rutrum odio eget arcu adipiscing sodales. Aenean et purus a est pulvinar pellentesque. Cras in elit neque, quis varius elit. Phasellus fringilla, nibh eu tempus venenatis, dolor elit posuere quam, quis adipiscing urna leo nec orci. Sed nec nulla auctor odio aliquet consequat. Ut nec nulla in ante ullamcorper aliquam at sed dolor. Phasellus fermentum magna in augue gravida cursus. Cras sed pretium lorem. Pellentesque eget ornare odio. Proin accumsan, massa viverra cursus pharetra, ipsum nisi lobortis velit, a malesuada dolor lorem eu neque.

### 9.3 Main Section 2

Sed ullamcorper quam eu nisl interdum at interdum enim egestas. Aliquam placerat justo sed lectus lobortis ut porta nisl porttitor. Vestibulum mi dolor, lacinia molestie gravida at, tempus vitae ligula. Donec eget quam sapien, in viverra eros. Donec pellentesque justo a massa fringilla non vestibulum metus vestibulum. Vestibulum in orci quis felis tempor lacinia. Vivamus ornare ultrices facilisis. Ut hendrerit volutpat vulputate. Morbi condimentum venenatis augue, id porta ipsum vulputate in. Curabitur luctus tempus justo. Vestibulum risus lectus, adipiscing nec condimentum quis, condimentum nec nisl. Aliquam dictum sagittis velit sed iaculis. Morbi tristique augue sit amet nulla pulvinar id facilisis ligula mollis. Nam elit libero, tincidunt ut aliquam at, molestie in quam. Aenean rhoncus vehicula hendrerit.



## Chapter 10

# Discussion

### 10.0.1 Emerging trends in china

The likability of the younger generation of chinese people also matches the emergin trend of simplistic designs on chinese mobile applications.

### 10.0.2 Reason for differences

#### 10.1 Limitations

// FROM Investigation chapter Although many of the well-known websites in China are quite information dense, several other websites that have adopted a sleeker look. Two big examples of this is the messenger application WeChat, a popular Chinese social media platform, and the the Alipay service website. We will not focus on these more modern sites as it is beyond the scope of this research. In this project, we specifically select the most popular regularly used sites that differ from the western design standard. In the case of Taobao, it might seem very difficult for westerners to navigate the site, but it is now one of the biggest websites in the world. There are also cases of websites more or less copying western websites because they are blocked in China. A typical example of this is Youku, which mimicked the American video sharing site, YouTube - these types of sites will not be investigated in this report either.

#### 10.2 Future work



## Chapter 11

# Conclusion

### 11.0.1 Emerging trends in china

The likability of the younger generation of chinese people also matches the emergin trend of simplistic designs on chinese mobile applications.

### 11.0.2 Reason for differences

## 11.1 Limitations

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## 11.2 Future work



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