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# Culture and Website

User experience in website redesign based on cultural differences

Master's thesis in Interaction Design and Technologies

Zihua Yang

Department of Computer Science and Engineering  
CHALMERS UNIVERSITY OF TECHNOLOGY  
UNIVERSITY OF GOTHENBURG  
Gothenburg, Sweden 2019



MASTER'S THESIS 2019

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Master's Thesis 2019  
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Cover: Wind visualization constructed in Matlab showing a surface of constant wind speed along with streamlines of the flow.

Typeset in L<sup>A</sup>T<sub>E</sub>X  
Printed by Chalmers Reproservice  
Gothenburg, Sweden 2019



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## Abstract

The growth of multinational corporations has led to the increased importance of cross-cultural communication across the globe. Therefore, the effect of cultural differences on user requirements has become an essential issue. Hofstede's six dimensions and Hall's concept of high and low context cultures have been widely discussed and accepted, in relation to marketing and consumption. However, both theories were conceived in the 1970s and may not apply to today's environment. The investigations for this thesis sought to discover and identify how cultural factors influence user's preferences for user experience attributes on websites, combining Hofstede's and Hall's theories with Holliday's grammar of culture and Edwin Hoffman's Culture mode theories. Design attributes such as color and layout were determined using online surveys, usability tests and interviews with middle-class subjects from both Sweden and China. A redesigned website and a guideline for cultural localization in both countries are provided. The results confirm and extend prior research, as significant differences were found in some of the listed design attributes, but tend to be similar in some other attributes. Different user experience design is still suggested for successful communication in different cultural groups. Although this study was applied to cultural differences between China and Sweden, the methodology and design procedure can be adapted for other cultures.

Keywords: Cross-cultural design, User experience design, Web design, Usability, Communication, China, Sweden.



## Acknowledgements

I would like to thank Gordana Dodig Crnkovic, my supervisor at Chalmers, for providing strong support, clear guidelines and advice during the project. I am obliged to Peter Bladh and Linn Burman, my supervisors at Kollmorgen, for selecting such an interesting topic and making the study possible, also helping me to organize user tests and giving comments and feedback. Also thanks to all the testers, who spent time to fill out surveys, perform user tests and provide their opinions honestly. Finally, I would like to give special thanks to my family and friends, who never stop encouraging and supporting me, giving me the strength to pursue my dream to become a UX designer.

Zihua Yang, Gothenburg, June 2019



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## List of abbreviations

**HCI** Human-Computer Interaction

**UI** User Interface

**UX** User Experience

**PDI** Power Distance Index

**IDV** Individualism versus Collectivism

**UAI** Uncertainty Avoidance Index

**MAS** Masculinity versus Femininity

**LTO** Long-term Orientation versus Short-term Orientation

**IND** Indulgence versus Restraint



# 1

## Introduction

The rapid development of globalization and international trade have brought critical challenges to human-computer interaction (HCI). Designing websites and online services to fulfill the needs of people from different cultural backgrounds is one of the success factors in today's global economy [1].

The most important principle in the HCI field is “know your user”, in other words, human-centered design (HCD) is the foundation of commercial products [2]. However, humans usually live in social groups with different languages, cultures, social norms and values. So adopting diversity in user experiences (UX) for diverse people is essential for the globalized market. Simply providing the local language or currency for websites as cultural adaptation is not enough. Cultures affect the way users interact with a product and interpret its features [5], and different cultures lead users to have different web design preferences, such as layout, color, graphics, links, navigation, multimedia, and text. The failure of eBay in both Chinese and Japanese markets is a corollary of the grave consequences of underestimating the cultural differences between Asian and U.S. markets[3]. It also indicates that Levitt's theory “one size will fit all” is not the solution for global corporations [4]. Understanding these cultural preferences and translating these design elements for local conditions is essential for cross-culture UX designers.

Kingsley Davis (1949) argues in detail how culture is not static but is dynamically changing in society. The invention and popularisation of new technology is one way to change people's behavior. The Chinese market has 800 million internet users which keep increasing every year and is the largest population on the internet in the world [6]. To understand Chinese users in the context of the rapid growth of the internet industry can be a big challenge for international companies who have the desire to open huge market opportunities in China.

### 1.1 Industry Background

#### 1.1.1 Kollmorgen

Kollmorgen Automation AB is a Swedish company based on Goteborg, Sweden, which focus on producing motion systems and components for manufacturers. In response to the rapid growth in Chinese market, the company has a keen desire to

understand the cultural differences between China and Sweden to better expand the business and make promotion.

### 1.1.2 The website

<https://support.ndcsolutions.com/hc/en-us> is a website belong to Kollmorgen, focus on customer support and product documentation. The target user groups are clients and company employee based on different countries all over the world.

## 1.2 Research question

This thesis will focus on the research question:

*How different cultural factors influence user's preferences for UX attributes between Chinese and Swedish websites.*

To help answer this, a supporting question will be asked:

*How to adopt UX design for Chinese and Swedish users?*

To give answers to these questions, interviews will be held in China and Sweden to analyze how different cultures affect users' surfing behavior. A detailed UX design guideline will be provided to compare the different preferences of design elements. Furthermore, young people and middle age people are considered to have different web performance [7]. So when recruiting the participates, age will be selected and try to be balanced. The number of the participants will be equally divided (half of Chinese while another half of Swedish).

### 1.2.1 Deliverable

A Swedish website (<https://support.ndcsolutions.com/hc/en-us>) was redesigned based on the research results. Both Swedish and Chinese versions were implemented respectively which towards user's usability and applicability to increase user satisfaction based on different cultural background. As young people and middle age people are considered to have different web performance [7]. When recruited the participates, age was selected and try to be balanced. The number of the participants was equally divided (half of Chinese while another half of Swedish).

A design guideline was provided for general website design as a clear instruction to designers and developers on how to achieve principles for both Chinese and Swedish websites. The guideline priority focuses on UX elements design, dealing with the layouts, navigation, links, aesthetics part, including color, font style and visual representation, multimedia and content.

## 1.2.2 Delimitation

The content of <https://support.ndcsolutions.com/hc/en-us> a business website mainly focus on commerce, corporate information and product introduction. Therefore, the design guideline is only valid for websites in the same category with the same or similar functions and features.

The target user group for the website has a certain limitation. For Chinese users, it can be categorized to be middle class, who are well educated, have a full-time job, lives in mid-sized or big cities in China. For users from Sweden, they are well educated, have a full-time job and live in cities. The participants selected for this study followed the target user group pattern, who hold an undergraduate degree or above, and live in cities both in China and Sweden. Therefore, the result and conclusion of this research can only be seen as a sample for users limited in a certain scope.

## 1.3 Stakeholders

The stakeholders of this thesis including Chalmers University of Technology, Kollmorgen Automotion AB, participants of the research study, users, researcher of this thesis, and any other people who may have a relationship with this thesis.

### 1.3.1 Chalmers University of Technology

The school supervisor of this thesis is Gordana Dodig Crnkovic, professor in Interaction Design at Chalmers University of Technology. The examiner of this thesis is Staffan Björk, professor in Interaction Design at Chalmers University of Technology.

### 1.3.2 Kollmorgen Automotion AB

The thesis study corporated with Kollmorgen Automotion AB, a Swedish company, redesign a website for its Chinese clients to fit their cultural background and website design preference. Peter Bladh, director of product management is the supervisor in Kollmorgen.

### 1.3.3 Participants

Participants from China and Sweden was recruited for research study. They accomplished a series of tests and interviews for the redesign work.

### 1.3.4 Researcher

An interaction design student from Chalmers University of Technology was researcher of this thesis.

### 1.3.5 Users

The end users of the redesign website are the colleagues and clients of Kollmorgen Automotion AB.

## 1.4 Ethical Issues

It is not unusual that designers sometimes have to meet the ethical conflicts in a project. According to the book “Human values, ethics, and design” [26], there are twelve human values related to different ethical issues that should be considered during a design process. Designers should mutually understand the influence they might exert, which would result in a long-term impact on society. For this thesis, redesign the websites for both Chinese and Swedish, the most important ethics aspects are privacy, informed consent, usability and bias.

### 1.4.1 Privacy

The study is about how cultural differences influence user’s behavior and preferences for UX design. In this case, participants are persuaded to provide a list of personal information for detecting user behaviors and preferences. How to protect users’ privacy, how to reduce the risks from divulging this information to other people or organizations become one of the most severe problems in our design process. The famous Facebook data scandal [27] is an example how people’s life and activities were affected by data breach. Target users might be easily influenced by advertisement and be persuaded purchasing the particular commodity or attending particular events. As designers, we have the responsibilities to inform users of the risks they may meet in connection to the gathering individual data.

### 1.4.2 Informed consent

Back to the Facebook data scandal [27] mentioned above, the third-party app gathered and used personal data not only from users but also from their friends without their knowledge or any informed consent. This scandal was an invasion of users’ privacy and also lead to other issues such as lack of trust and autonomy [26]. In this study, the informed consent was signed based on the principle of voluntariness before they engage in the whole process for this study. Participants have the rights to know what information they would provide, and fully understand the reason and the purpose of data. In addition, participants had the right to modify or withdraw the consents once they feel unsafe or uncomfortable. They also had the right to delete their personal data if they consider it is necessary. All these rules mean that user’s personal data are controlled by law and can only be used for a certain purpose.

### 1.4.3 Usability

Undoubtedly, usability is the key point of the design of interaction of the user with the website. It should be user-friendly and easy to achieve tasks. According to



“Human values, ethics, and design” [26], UX design should consider user diversity more than aesthetics. Since the website can be visited by a range of different people with different background, how to create a product that can satisfy most of the users is one of the most important tasks for this project. For instance, the website should consider users’ social environment, culture, age, job, disability, education background to guide all kinds of users to understand how to visit it and meet their needs. Usability aims to narrow the gap in user’s background and make sure they enjoy the website.

#### **1.4.4 Bias**

Bias usually hides in details and is easy to be ignored. People with biased thoughts tend to refuse to open their mind and take other people’s opinions, which can influence user’s behaviors and beliefs and cause a long-term effect. Designer should take the responsibility to avoid harms and contribute to improving human situations. Since this thesis aimed to design a website based on cultural differences, a customized UX design was published based on the cultural preferences. On one hand, it is our goal to design for local users and meet their needs, on the other hand, this local customized cultural design might lead to the increase of social cultural tensions or increasing misunderstanding. For instance, if the social distance with respect to ethics in the culture is high, should the design condone this phenomenon and enlarge the social inequality? Designers should pay attention and always try to improve communication and equity as basic principles in modern democratic society..



# 2

## Theory

In this chapter, relevant theoretical concepts and modes regarding how culture influences UX design will be brought up. Most of the thesis mentioned here is about cultures and how cultures impact human behaviors. Two classical culture theories, including Hofstede's six cultural dimensions theory and Hall and Hall's low-context and high-context culture model is introduced first, which were widely applied in the researcher similar area. Followed up with Holliday's grammar of culture and Edwin Hoffman's culture mode, which giving suggestions on new aspects to consider the relationship between individuals and cultures. Followed are the concept of culture globalization and the introduction of user experience elements, for better understanding this study.

### 2.1 Culture and website design

There is a variety of understanding of culture. A broad definition of culture is that it is the general behaviors, beliefs, values and other common characteristics to the people live a specific group or society [8]. Culture influences the way people think and behave as well as the way they understand and interact with a product. For website design, culture also play an important role to impact people's behaviour and preferences, as people live in different regions are influenced by the local values and other characteristics.

Figure 2.1 shows IKEA's website in Sweden and China. We can see that IKEA sells similar products in China and Sweden, and it is easy to figure out the two websites are from the same company at the first glance. However, these two pages applied a series of differences UX design, including layout, navigation, images, font style, color, etc. It can be assumed that a successful international company such as IKEA would do detailed user research before they launch the websites. Does IKEA apply different user interface (UI) based on cultural preferences? How many of the UX differences on the web pages are connected to cultural differences?

Figure 2.2 shows two online shopping websites: Adlibris and Taobao, designed by Swedish and Chinese companies respectively, which show a totally different design style. These two online shopping websites have a similar business strategies that they sell a large range of products cover different categories. Users can search and find similar items with different prices, compare them and purchase what they like. It can be seen from the pictures that the UX design styles are totally different. It

## 2. Theory

is one of the evidence that cultures may play an important role in UX design.



Figure 2.1: IKEA's website in Sweden and China

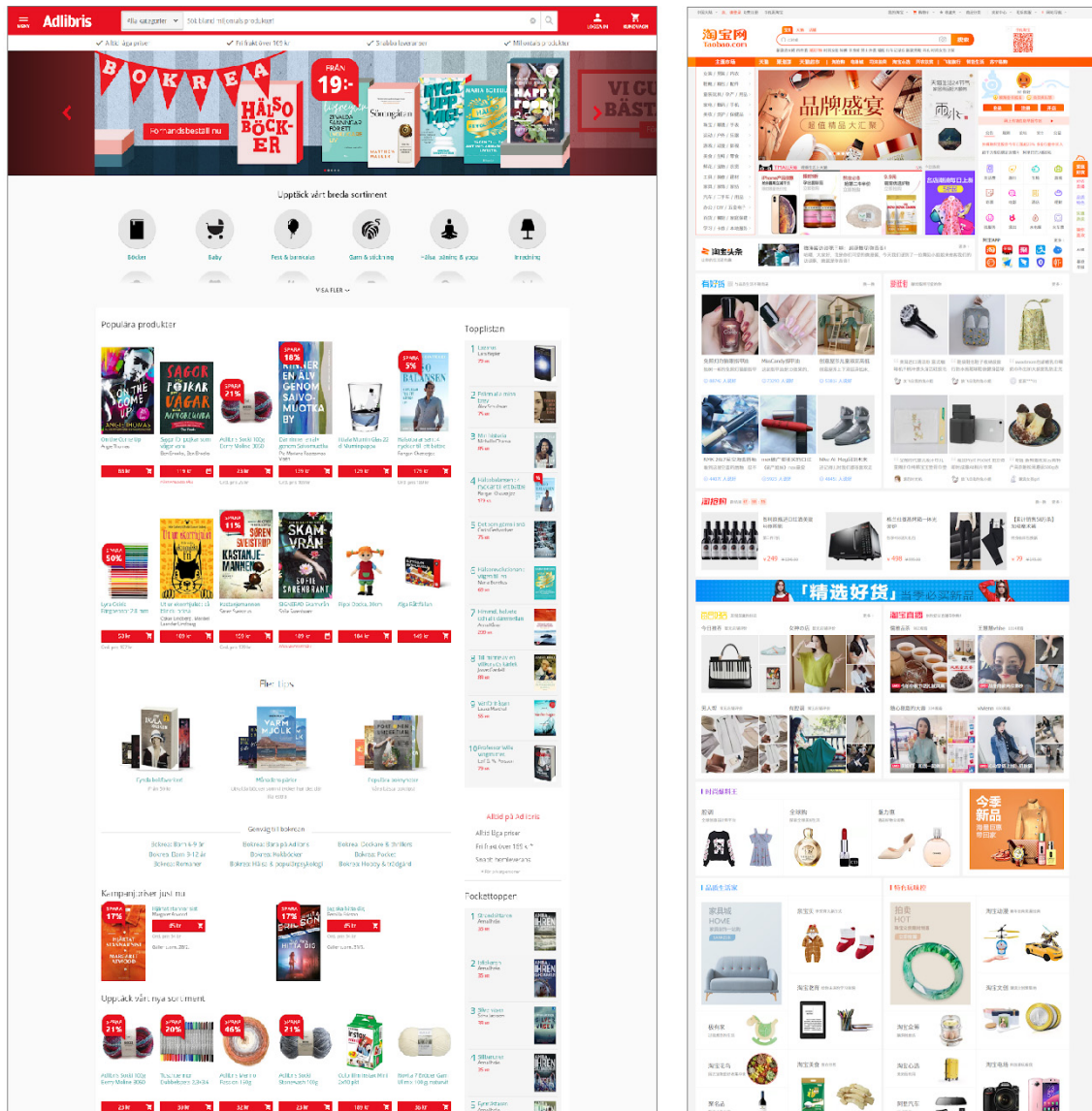


Figure 2.2: Online shopping websites in Sweden and China

## 2.2 Hofstede's six cultural dimensions theory

Hofstede [9] defined culture as “the collective programming of the mind which distinguishes the members of one group or category of people from another.” Hofstede and Minkov's cultural dimensions theory [9] is widely applied as the most comprehensive framework of national culture for business purpose. It is also used in cross-cultural web design for analyzing how cultures influence web design. He organized and determined cultures along six dimensions:

### 2.2.1 Power Distance (PDI)

People's attitude to the degree of hierarchical structure in the social and how they manage the inequalities. In high power distance context, people tend to accept a

large degree of wealth or status disparity without any reason, while in low power distance society, people require equality and demand justification for power inequalities.

### **2.2.2 Individualism vs. Collectivism (IDV)**

People belong to individualism society are considered to take care of themselves and their immediate family members. In opposite, people live in collectivism society can be expected to take care of relatives and other members for extra resources.

### **2.2.3 Uncertainty avoidance (UAI)**

Uncertainty avoidance measures social member's tolerance for uncertainty and ambiguity. Societies with high uncertainty avoidance expect members to follow certain social rules and behaviors while low uncertainty avoidance countries are more relax and allow people to explore themselves.

### **2.2.4 Masculinity vs. Femininity (MAS)**

This dimension does not represent gender but the way people concern achievement and financial rewards to success. People are used to a competitive environment in a high masculinity society. By contrast, high femininity dimension means people prefer work-life balance lifestyle.

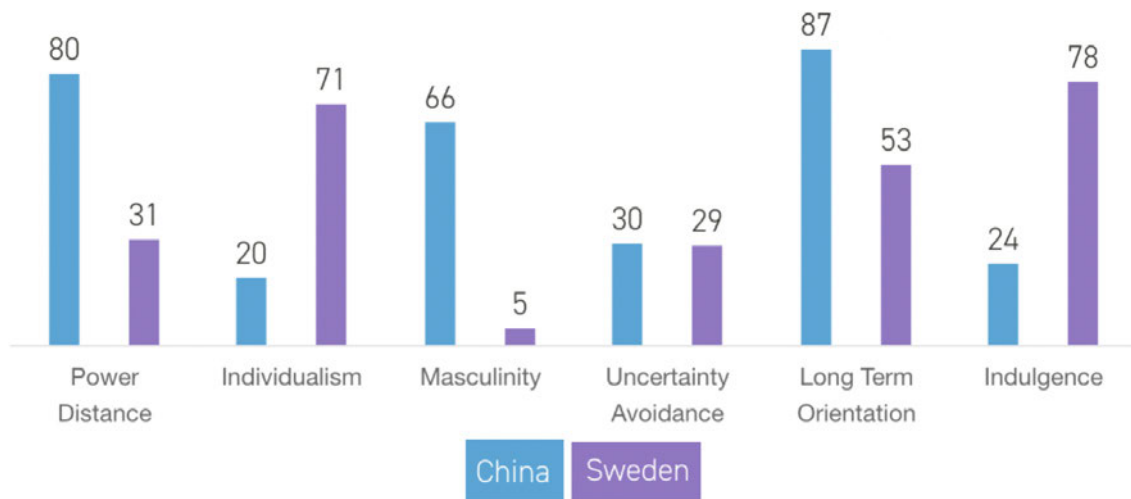
### **2.2.5 Long Term vs. Short Term Orientation (LTO)**

Societies with lower scores in this dimension would rather keep their traditions and norms and are hesitant about social changes. However, societies with higher scores in this dimension are more open to modern education and social revolution.

### **2.2.6 Indulgence vs. restraint (IND)**

Societies have high Indulgence scores tend to have a tolerant attitude towards people enjoy life and have fun. Societies have low indulgence scores are considered as the restriction that people are regulated by strict social rules.

As the dimension scores are relative to each culture, this model can be used through comparing with different cultures. We can see the cultural differences between Sweden and China in figure 2.3. It can be seen that marked differences display in almost all the dimensions in these two cultures. Sweden owns low power distance, masculinity, long term orientation scores, and high individualism and indulgence scores, while the scores show in an opposite way in China. These results match those observed in UX design in both cultures mentioned above, that culture may have played a vital role in bringing about how cultures influence UX design.



**Figure 2.3:** Cultural dimension comparison between China and Sweden [10]

## 2.3 Hall and Hall's low-context and high-context culture model

Hall and Hall's cultural model [11] analyze cultures by two key factors: context and time, and dividing cultures into two categories: high-context (HL) and low-context (LC). He considered that culture is all about communication, and all the acts, events and material things behind the communication have certain meanings [11].

### 2.3.1 High-context vs. Low-context

In HC societies, people prefer a long-term relationship and may use a more implicitly and ambiguity communication style. By contrast, communication in LC societies is more direct, precise, open and rely more on the literal meaning of the words. According to this culture model, China is a typical HC society while Sweden belongs to LC society.

### 2.3.2 Time

It connects to how people used the time to organize tasks. It is divided into two categories: single task focus, and multi-tasking. According to the culture model, the Chinese prefer to perform multitasking (polychronic) and Swedish tend to conduct single tasks (monochronic).

## 2.4 Holliday's grammar of culture

According to the grammar of culture created by Holliday [29], culture is not a single structure but composed of three domains: particular social and political structures, underlying universal cultural processes and particular cultural products. In his culture theory, Holliday indicates that Culture is influenced by multiple factors, people



would generate different culture concepts based on family, politics, literature, media, etc., even they live in the same society.

As can be seen in figure 2.4, underlying universal cultural processes is in the middle of the grammar, combined with small culture formation and personal trajectories. Small culture formation is structured by small groups such as families and work groups, which is the foundation for personal culture concept. Meanwhile, individuals who belong to small culture formation would generate the concepts of their own culture from personal trajectories such as society and ancestors.

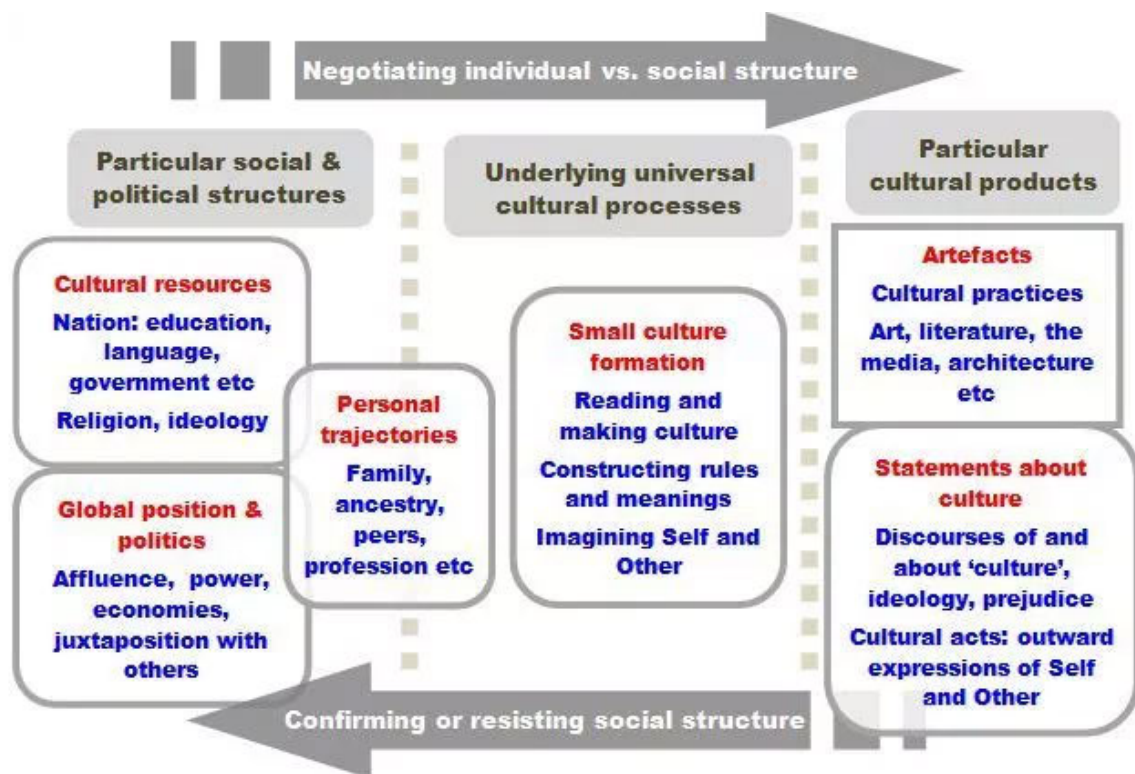


Figure 2.4: Grammar of culture, based on the figure by Hoffman [29]

Particular social and political structures are on the left of the grammar, which is constructed by two blocks, cultural resources and global position and politics. Culture resources, including education, languages, government and the overall ideological of the living environment impact people's behavior. Global position and politics including the nation and its history, and how individuals consider the position of themselves in the world. The overall understanding of social and political structures impact the way an individual's thoughts of culture.

On the right of the grammar is the particular cultural products, which is made up of artifacts and statements about cultures. Art, literature, media, architecture and cultural practices group together as artifacts. Cultural practices are the things individuals do every day, for instance, eat, greet and show respect, which are the most common cultures in a nation. And for statements about cultures, is the way how



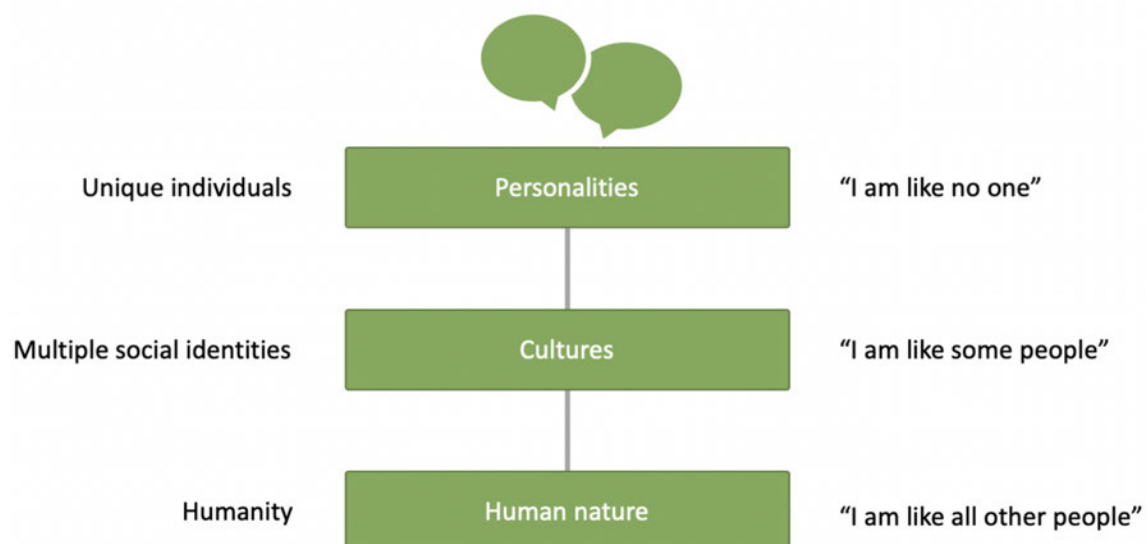
individuals represent and display cultures by themselves.

According to this theory, it is not surprised that individuals can generate a variety of cultures, even they live in the same society.

## 2.5 Edwin Hoffman's culture mode

In the book *Diversity competence* [30], Hoffman describes intercultural communication should follow the pattern as shown below (Fig 2.5). First of all, individuals from different background have and share the basic needs, emotions and capabilities with others, as illustrated in the lower level in the figure. In this level, people's thoughts and behaviors are similar no matter where they come from. Then in the second level is how people deal with and express these basic needs, emotions and capabilities. In this level, cultures would influence people's behaviors from different ethnic, nations or religious background. In the last and highest level is personalities, which is the ultimate expression of an individual to communicate with others. This should be a unique way not like any others in the world.

In Hoffman's opinion, interaction and communication are in encounters between unique personalities which are also impacted by human nature and cultures.



**Figure 2.5:** Humanity, culture and personality: a conceptual scheme (based on a figure by Geert Hofstede, 1991)

### 2.6 Cultural globalization

Cultural globalization refers the phenomenon that ideas, meanings, and values are transmitted around the world, propelled by the rapid advancement of internet, social media, entertainment, international travel, immigration, food, etc [31]. The development of wireless communications promotes conditions for inexpensive air travel, as well as internet, telephones and television, breaks the barriers of time and space, allows people to receive and send news and information in every corner of the world, which accelerate the spread of globalization [33].

Globalization has a trend toward homogeneity that will eventually lead people to live in different countries or regions experience essentially the same culture [32]. For instance, nowadays, it is easy to find Starbucks, Coca-Cola and Adidas in cities all over the world. These brands apply the same design styles for their visual Identity including color, logo, stores, service, etc, As well as selling similar products with similar packages.

Furthermore, globalization of fast food does not only introduce exotic flavor to local residents but also influence public conduct [35]. According to the book “Golden Arches East: McDonald’s in East Asia”, Watson describes how fast food changed local people behaviors and preferences. One example is in some Asian countries, such as Japan and China, eating food without spoon or chopsticks was considered as a breach of etiquette. However, with the popularization of McDonald’s, it is common to see locals to eat hamburgers with hands in public place nowadays.

Moreover, the power of entertainment, such as social media and digital games also have a huge impact on people’s idea and behaviors. People use the same mobile apps, play the same games, watch the same series all over the world lead people to have the tendency to generate the same preferences and taste of entertainment style. The popularization of Japanese video game in Sweden is an example that people first interested in one thing from a foreign country, then they become interested in other cultures from Japan. Now it is not a surprise that people are familiar with Bushido and kimono in Sweden.

### 2.7 User Experience Elements

According to the Nielsen Norman group [7], user experience is about all aspects of how user interact with a company, including its service and products [7]. User experience usually connects with HCD, that focus on understanding users’ needs and requirements. Designers are required to create specific user experiences to improve the user’s daily life [15]. The ultimate goal of HCD design is to improve efficiency and usability by observing people’s behaviors and conducting a series of research to analyze user’s desires and needs.

Researchers have suggested a series of design attributes that can represent how users

interact with a product. These key attributes are listed as layout, navigation, links, aesthetics, multimedia and content.

### **2.7.1 Layout**

Layout represents the structure of a web page. How the information organized determines how many efforts users spend to understand the content of the page. Research shows that people from monochronic cultures accept hierarchical structures more than people from polychronic cultures. By contrast, people from polychronic cultures would rather visit parallel structures [16]. Alexander, Thompson and Murray's study [17] shows that Chinese users prefer three-column web pages and display density.

### **2.7.2 Navigation**

Navigation is a set of content that allows users to visit information in an effective way. Navigation includes the main menu on the web pages and the fat footer at the bottom of the pages, which is usually used as quicklinks. Research shows that users from high uncertainty avoidance countries prefer clear and logical order of menu items [18]. In addition, users from HC would like to visit websites with many sidebars, but users from LC are not interested in sidebars at all [20].

### **2.7.3 Links**

Links is how user visit data from one location to another by click or tap [19]. Research found that users from HC prefer open links in new windows, while users from LC would rather open links in the same browser windows [17]. Moreover, HC users tend to apply icons or visuals to represent the meaning of links, while LC users would like to visit links with precise and logical meaning. Gould, Zalcaria and Yusof [28] consider that websites from collectivism culture show a lot of links which connect with other organizations to emphasize strong network with other organizations.

### **2.7.4 Aesthetics**

Aesthetics contains color, font style and visual presentation, and these elements decide how information is displayed on the website.

#### **2.7.4.1 Color**

It is well understood that color contains different meaning in different cultures and can exert on perception in design [21]. For instance, red means lucky, happiness or government in China, but means strength in Sweden. White usually represent death and mourning in China, and in Sweden, it implies peace and nature. National flag color and traditional color are popular in HC cultures [17].

### 2.7.4.2 Font style

HC prefer to use bold and strong fonts for important context [17].

### 2.7.4.3 Visual presentation

Images and animations are more likely to be applied in HC websites to convey information [22]. Moreover, Alexander, Thompson and Murray's research [17] shows that images of leaders and skyscraper are popular in collectivism societies with high power distance. Pictures promote collectivistic characteristics, for example, group activities images are popular in collectivism cultures. In opposite, images of people's daily life or nature are popular among individualism societies with low power distance. Individual images are more often used in individualism societies. In addition, cartoons and animal pictures are popular in HC culture [20].

### 2.7.5 Multimedia

Pop-ups are frequently applied in polychronic cultures but not at all popular in monochronic cultures [17]. Multimedia displayed on the screen with 'play' or 'pause' buttons are more popular in individualism societies, but not found in collectivistic societies.

### 2.7.6 Content

Individualistic users prefer websites that allow users to customized content and provide a variety of content options. However, collectivist users are interested in popular and ranking content so that they can follow the masses [18]. Gould, Zalcaria and Yusof's research [28] shows that high power distance culture users prefer clear structure and description of the company's hierarchy to better understand the organization. By contrast, low power distance culture users focus on personal needs rather than the company's organization.

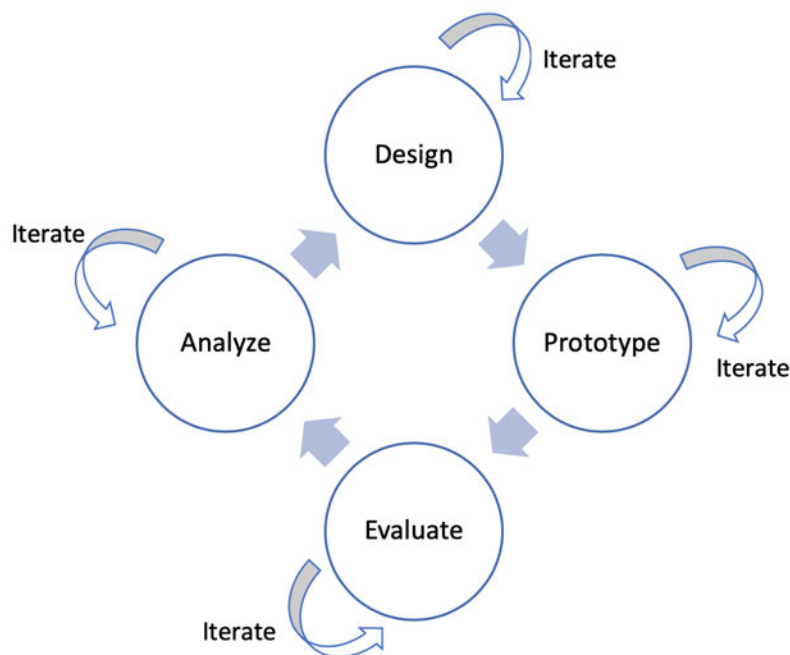
# 3

## Methodology

In this section, design methods considered suitable for this thesis are listed. A description of each method and the reason why it was selected will be provided later on, as well as their advantages and disadvantages.

### 3.1 Design Methods

Throughout this project, Gaver's theory [23] has been adopted, which provides reflections to address concerns from research through design. Gaver concluded that research through design has a better chance to produce provisional, contingent, and aspirational theories, compared with Philosophy of Science theory. He commented that research through design is the solution to establish theories of design comprehensively, which means design research should be based on realized design products. Several design methods were considered during the preparatory phase: questionnaire, diary studies, think aloud, pilot test and usability tests. The whole design process followed the UX process [25] to understand the user's needs and requirements (Fig 3.1).



**Figure 3.1:** The UX design process [25]

### 3.1.1 Diary study

The Diary study is a design method that allows participants to describe their daily life and feelings in a short period to designers for future research [24]. As the re-design work focuses on different cultural preferences, and culture is an abstract concept related to all the aspects of people's daily life, a diary study is supposed to contribute to an understanding of the participant's values and hidden ideas of how they perceive things around them.

Participants should be given a list of tasks and be required to achieve them in one week, one month or longer. The tasks are about how participants make decisions, relationship with things, preference websites, etc. Participants are asked to submit pictures or brief descriptions in text for these tasks. Traditionally it has been achieved by pens in journals through technology affords new solutions that the diary can be created on digital devices and send back by email.

A Diary study allows participants to provide information based on their daily life in a central period. It gives designers an opportunity to discover the user's behavior in natural usage scenarios, to better understand user abilities and user experience. Secondly, a diary study reveals external factors that influence user experience, which are impossible to understand in a closed testing environment. Finally, a diary study usually lasts a longer duration, which encourages participants to think about their experience deeply as well as find special ways to express their feeling. However, since participants follow the diary study independently, designers cannot observe their behavior when they do the tasks, which may lead to misunderstanding. Furthermore, longer duration also brings issues, as participants may feel pressure to achieve a series of tasks in a long period, which may bring bias and moods when they accomplish tasks. This would lead to an inherent bias in the later study.

### 3.1.2 Questionnaire

Questionnaire is an efficient method to collect large quantities of data [24]. A questionnaire is a time and cost-effective solution for data collection. With an online questionnaire, it is easy to collect results from a large audience. Besides, with online analysis tools, it is easy to analyze the results without a statistics or scientific research background. One more advantage is that, as questionnaires are most often anonymous, participants usually accomplish them without any pressure, which could provide them with an environment to write down their true thoughts.

A Questionnaire also has some disadvantages. Participants may misunderstand or be unable to interpret the questions and that may lead to skewed results. Short answer questions should be created in order to ensure individuals fully understanding the meaning of the questions, which would cause another problem, that it is difficult to gain explicit and precise answers through the questionnaire. Moreover, it is not uncommon that questions are ignored or unanswered. If all the questions are set as required, some individuals may stop answering the questionnaire and close the window.

### 3.1.3 Prototyping

Prototyping is the method that transfers the design concept to the realization [24] based on the initial data collected from participants. Prototypes are divided by the level of fidelity: low-fidelity prototype, middle-fidelity prototype and high-fidelity prototype.

Prototyping allows participants to know the feeling and look of the product before the final release. Also, it allows designers to test usability and find problems for ideation. Since designers usually build prototypes with paper or software, it is a time and cost-effective way for early-stage testing. However, since prototyping is not an actual website that allows testers to explore every corner on the pages, it may limit the actual user behavior in the real world as participants can only interact with the pages assigned by designers. The missing features and details may lead to misunderstanding.

### 3.1.4 Thinking aloud

Thinking aloud requires testers to articulate their thoughts, activities and feeling while achieving tasks assigned by researchers [24]. Usually researchers would repeatedly remind participants to speak out what they are thinking when they go through a task. It allows designers not only to see the process of addressing the tasks but also to observe testers' behavior and moods to improve the product.

Think aloud is an effective way to figure out usability problems in the early design stage. As a face to face interview method, think aloud allows designers to conduct open-end interviews based on participants' behaviors for future improvement. Moreover, think aloud also gives designers the chance to generate quotes which they may have ignored. However, when applying the think aloud method, it is common that testers get stuck when they perform tasks and have to think aloud at the same time or forget to speak out what they are doing during the test. Sometimes testers spend a huge amount of time expressing their views about the products, which are not related to the purpose of the testing.

### 3.1.5 Usability tests

Usability tests are the way to test a product by empirical evidence while observing participants' behaviors and emotions [24]. They are supposed to be conducted after establishing the website prototype in order to receive feedback for future development. The reason for performing usability tests is, that most of the design methods lack actual user behavior since they only collect data that participants provide themselves. Usability tests can contribute to real users' behaviors and feelings while they visit the website for the later iteration.

Usability tests give designers an opportunity to know if people would enjoy and go through the product in an easy way. It can be proof that the design is on the right track before refining the final design. However, though participants can figure out

the interactive problems in the design, it is difficult for participants to explain what should be changed. Besides, if the participants cannot achieve the task themselves, designers may give them hints that help them to accomplish the task, which would lead to biased results.

#### **3.1.6 Pilot test**

A pilot test is a small-scale trial before the formal study with the purpose of testing if the proposed methods and prototyping are viable. Performing a pilot is a solution to find out shortcomings and potential confusion and give designers the chance to modify the methods and prototyping before the real test. The data of the pilot test should not be included in the final result. Participants who attend the pilot test are not allowed to join in the subsequent tests as they have already had preexisting knowledge about the project which can distort the result [36].



# 4

## Planning

The study was planned to start from week three in 2019 and be accomplished in week 21. Supervised by both supervisors at Chalmers and at Kollmorgen every week, to ensure the study was on the right track and achieve the goal.

### 4.1 Methods selection

Initially, diary study, prototype and usability tests were selected. The plan was to recruit a group of Chinese and Swedish participants, who first did the diary study to generate a design concept and create the prototypes. They Then were supposed to test and iterate the prototypes for the final redesign websites. Participants were supposed to attend all three testings for a consistent result.

However, some of the participants could not achieve all three testings due to work reasons. Moreover, diary study requires participants to accomplish a number of tasks in a certain period of time, which made some participants felt pressured or worried about whether they can finish the tasks on time as most of the participants have full-time jobs.

Therefore, the diary study method was replaced by an online questionnaire for a flexible and easy procedure, as it could be done in several minutes. <https://surveys.enalyzer.com> was used to create a picture-based questionnaire. It was shared to employees working in Kollomorgen and interaction design master students studying in Chalmers. The purpose was to gain as much data as possible at the early stage to see a pattern of how cultural background influences individual web design preference. Two languages: Chinese and English were shown to support the questionnaire for participants from different regions. Low-fidelity prototypes were applied based on the result of the online questionnaire. A pilot testing with a small scope of users was added, followed up with an iterative improvement to make sure the formal usability test was fully prepared. High-fidelity prototypes were implemented for the usability test, which was retained as the method does not take too much time, so employees finished them without pressure. They were tested and discussed by participants and participants' response received based on aesthetics and usability. For the usability test, <https://www.surveymonkey.com> was applied for feedback and comments received. Google sheets was used for calculating statistics.

### 4.2 Tools

Several tools and services were applied in the design process. Adobe XD is a tool for creating prototyping from low-fidelity to high-fidelity for web and mobile apps. In this study it was mainly used for website wireframing and interactive prototypes for the usability test and iteration. Compared with photoshop, XD is more straightforward and effective for low-fidelity prototyping, as it provides a simple-click interaction prototyping solution, which is useful for website design testing. Photoshop was used for the final website design as it is a precise design tool providing pixel-perfect level design, which works for final web page development.

### 4.3 Time plan

This study was planned to be divided into five stages: literature study, analyze, design, evaluation and thesis writing. Meanwhile, design iteration was conducted in the whole design process.

20-01-2019 - 14-02-2019 Literature study

Several journal research articles in this area were selected for the literature study. The Hofstede's cultural dimensions, Hall's high/low-context culture model, Holli-day's grammar of culture and Hoffman's culture mode were selected to analyze the cultural differences between China and Sweden.

15-02-2019 - 28-02-2019 Analyze

Planning report was submitted to Chalmers and presented at Kollmorgen. McDonald's websites in Asia and the Scandinavian were analyzed with the purpose of finding out cultural differences between Chinese and Swedish in today's fast-paced digital world. User research was conducted based on the analysis results.

01-03-2019 - 27-03-2019 Design

Design concepts and low-fidelity prototypes were created based on the data collected in the analyze stage. Pilot testing was conducted ahead to ensure the usability test would work well. The prototypes were refined in the whole process.

28-03-2019 - 12-04-2019 Evaluate (Usability tests)

Redesign pages were created based on the usability test result. Design guideline was also built in this stage.

15-04-2019 - 31-05-2019 Report Writing

Finishing the thesis report and preparing for the final presentation

# 5

## Design Process

In this chapter, the procedure of this study is described. The design process included several steps: preparation, user research, ideation and low-fidelity prototyping, pilot testing, usability testing, evaluation, final redesign and design guideline setting. First of all, McDonald's website design in part Asian and Scandinavian areas were analyzed for understanding the different design in different regions. Then a user survey was published online to gather data from Swedish and Chinese people about their web design preferences. Prototypes were created based on the user data collected from the survey, followed up with a user test and an analysis for iteration and the final results.

### 5.1 Preparation

The initial phase of the study was dedicated to literature research in the domain of intercultural HCI design. The general concept and structure of the study were created in this phase.

Literatures relevant to intercultural design were read in this phase. As this research is mainly focused on commercial and business websites, the goal was to find literature regarding this subject. Interestingly, there are not so many literature aimed at HCI in different cultures. Moreover, when it related to the field of market and consumption, most literature focus on the internet of things (IOT) or industrial design in different cultures. Literature for website analysis tends to have a preference for government or university websites rather than consumer websites.

Würtz [20] provides an idea for HCI design in different cultures by analyzing McDonald's websites in different regions. The American fast food chains has more than 26,000 restaurants in 120 countries [34], and applies different website design in different areas, which is a good example for cross-cultural HCI design analysis, as it can be assumed that a successful international company has done user preference testing for the website and design pages based on customers preferences to improve HCI on websites in each culture.

As Würtz's research was 14 years ago, and website develop technology is rapidly growing, all the McDonald's website design displayed in the paper has been changed since then. It was decided that this study would first analysis nowadays McDonald's

websites across Asia and Europe, especially in the Scandinavian area, to observe whether the website design still match the results on the paper. If the same data and results would be received, the low-fidelity prototyping would be designed in the next phase, otherwise, a questionnaire would be launched for the latest user data.

### 5.1.1 An Analysis of McDonald's websites

The analysis of McDonald's websites contains websites from countries belong to either HC or LC cultures. Mainland China, Hong Kong, Japanese and Korean websites were selected as representatives of HC cultures, while Denmark, Sweden, Norway and Finland contribute representatives of LC. The analysis of McDonald's websites contains websites from countries belong to either HC or LC cultures. Mainland China, Hong Kong, Japanese and Korean websites were selected as representatives of HC cultures, while Denmark, Sweden, Norway and Finland contribute representatives of LC cultures.

The analysis of the websites mainly forward on user experience elements including layout, navigation, links, color, font style, visual presentation, multimedia and content. For content on the webpage, the analysis refers to the form and expression of the content on the web pages rather than written text. One thing should be noticed is, this analysis is mainly focused on a comparison between Würtz's research result and nowadays websites design, to figure out whether website design follows the same design patterns in line with expectations. In this case, there is no in-depth analysis in this stage.

### 5.1.2 Result

The following description illustrates how cultures impact McDonald's website design in 2019.

#### 5.1.2.1 Animation

According to Würtz [20], HL cultures tend to apply animation connected with human on web pages while LC cultures only use few animation. In 2019, no significant difference between the two culture groups was evident. As shown on the screenshot, no animation displayed on websites in Mainland China (Fig 5.1), Hong Kong (Fig 5.3) and Korea (Fig 5.4), only the Japanese website (Fig 5.2) shows a gif about moving products. Neither Chinese or Japanese websites use animation in connection with pictures of moving people. Actually, it seems that it is not popular to show people's photos on Asian's website anymore. In all the four Asian cultures, products occupy the biggest and the most important places, only small pictures show people's activities.

By contrast, follow the same pattern as Würtz's results, that none of the four websites in Denmark (Fig 5.5), Sweden (Fig 5.7), Norway (Fig 5.6) and Finland (Fig 5.8), use any of animations on their pages.



Figure 5.1: McDonald's website in Mainland China

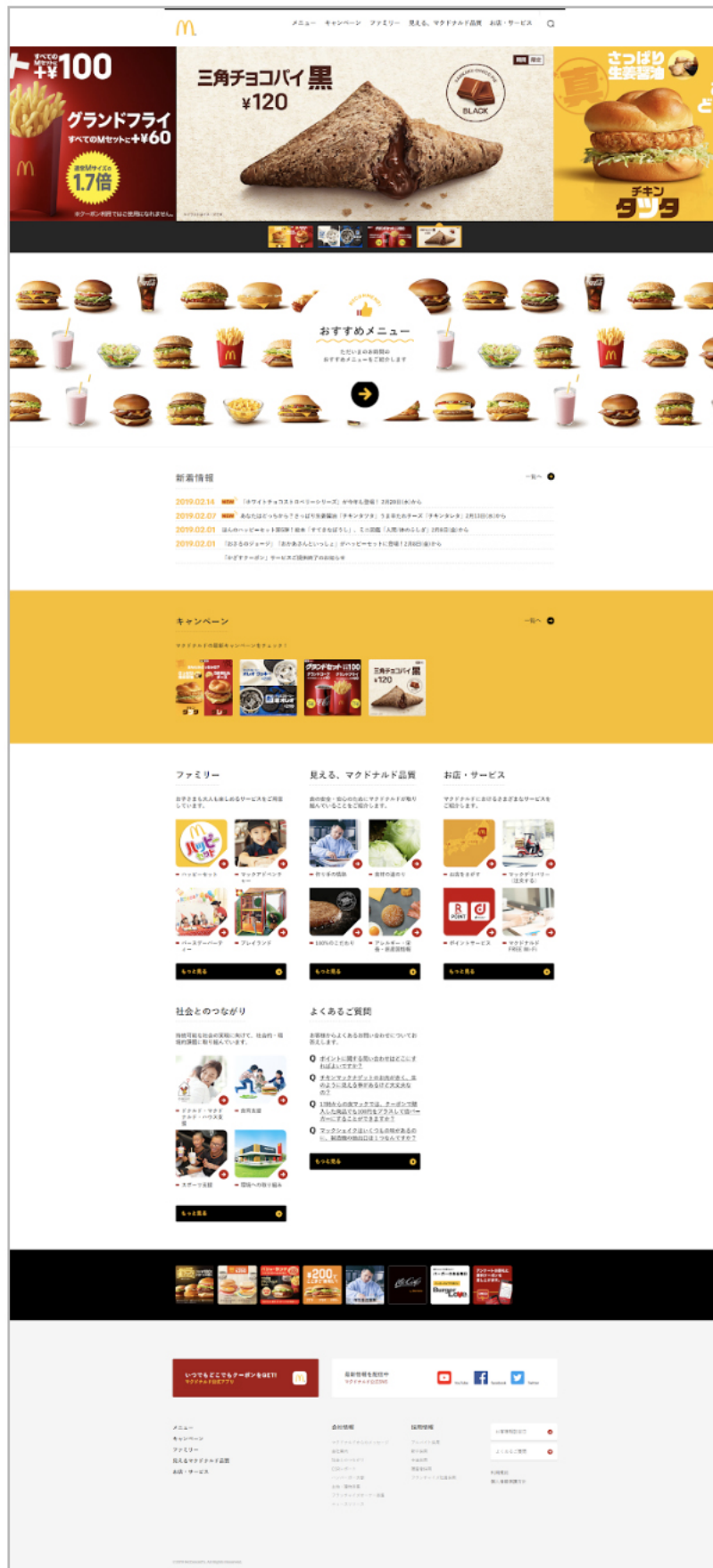


Figure 5.2: McDonald's website in Japan





Figure 5.3: McDonald's website in Hong Kong



Figure 5.4: McDonald's website in Korea

## 5. Design Process

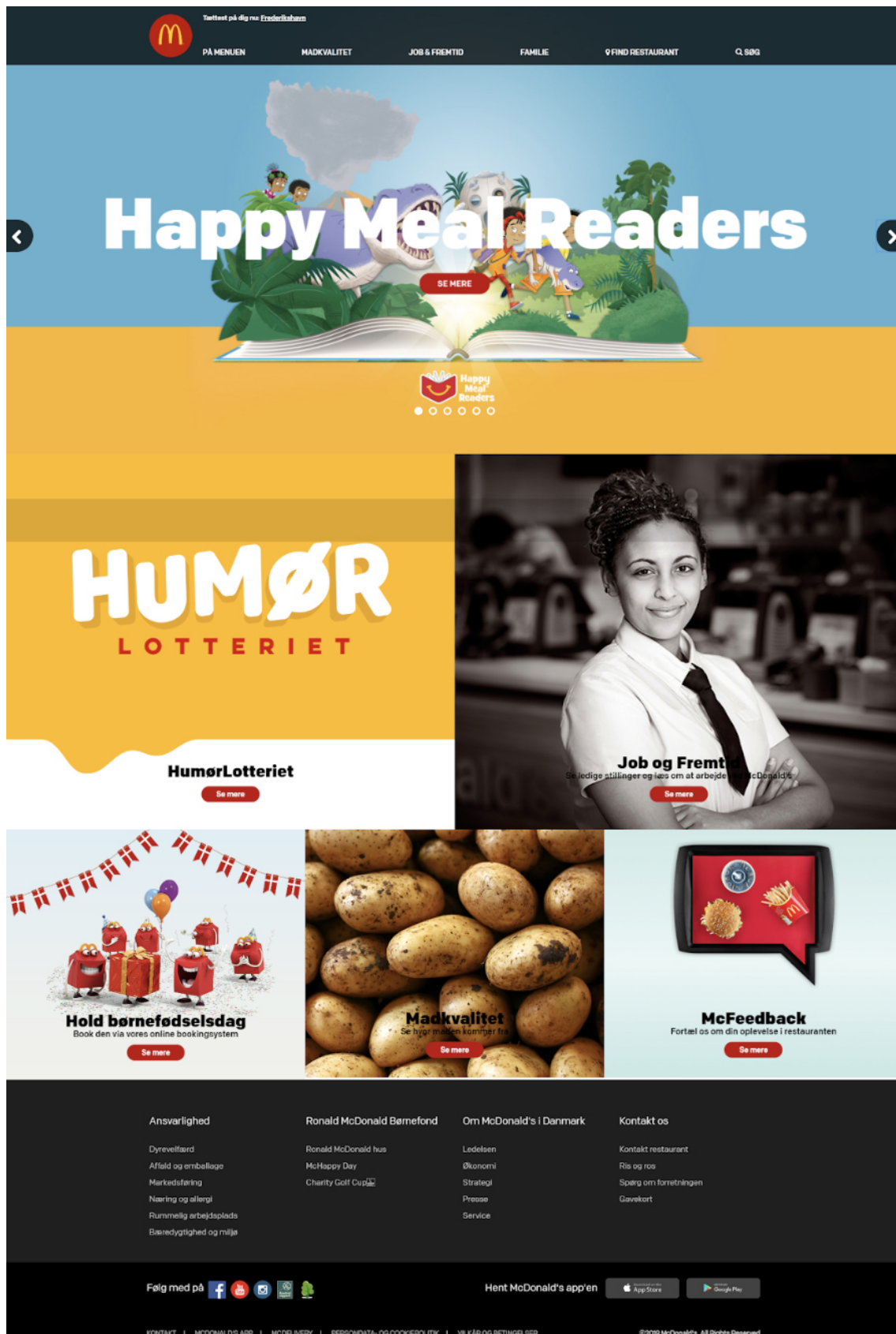


Figure 5.5: McDonald's website in Denmark



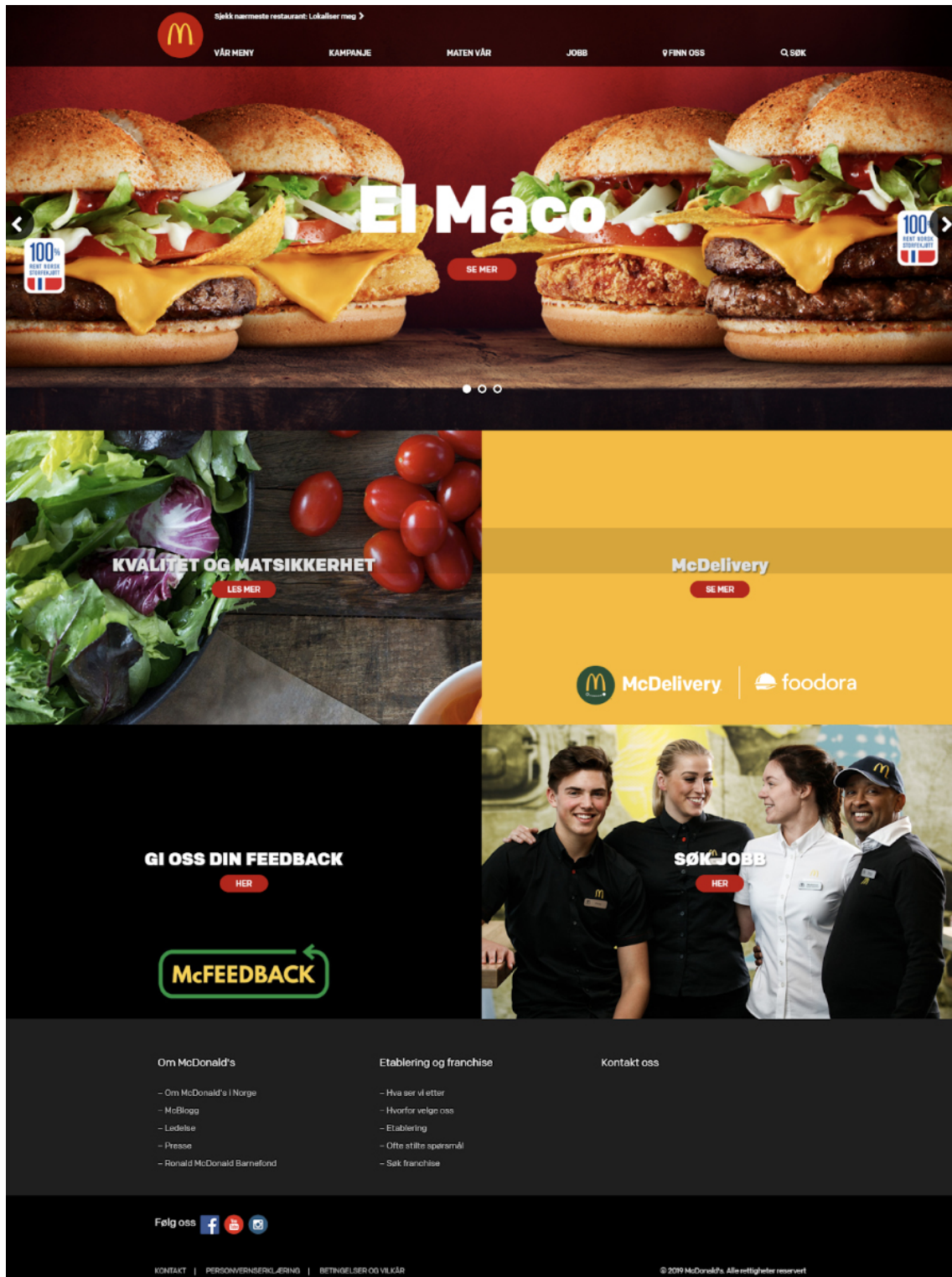


Figure 5.6: McDonald's website in Norway

## 5. Design Process

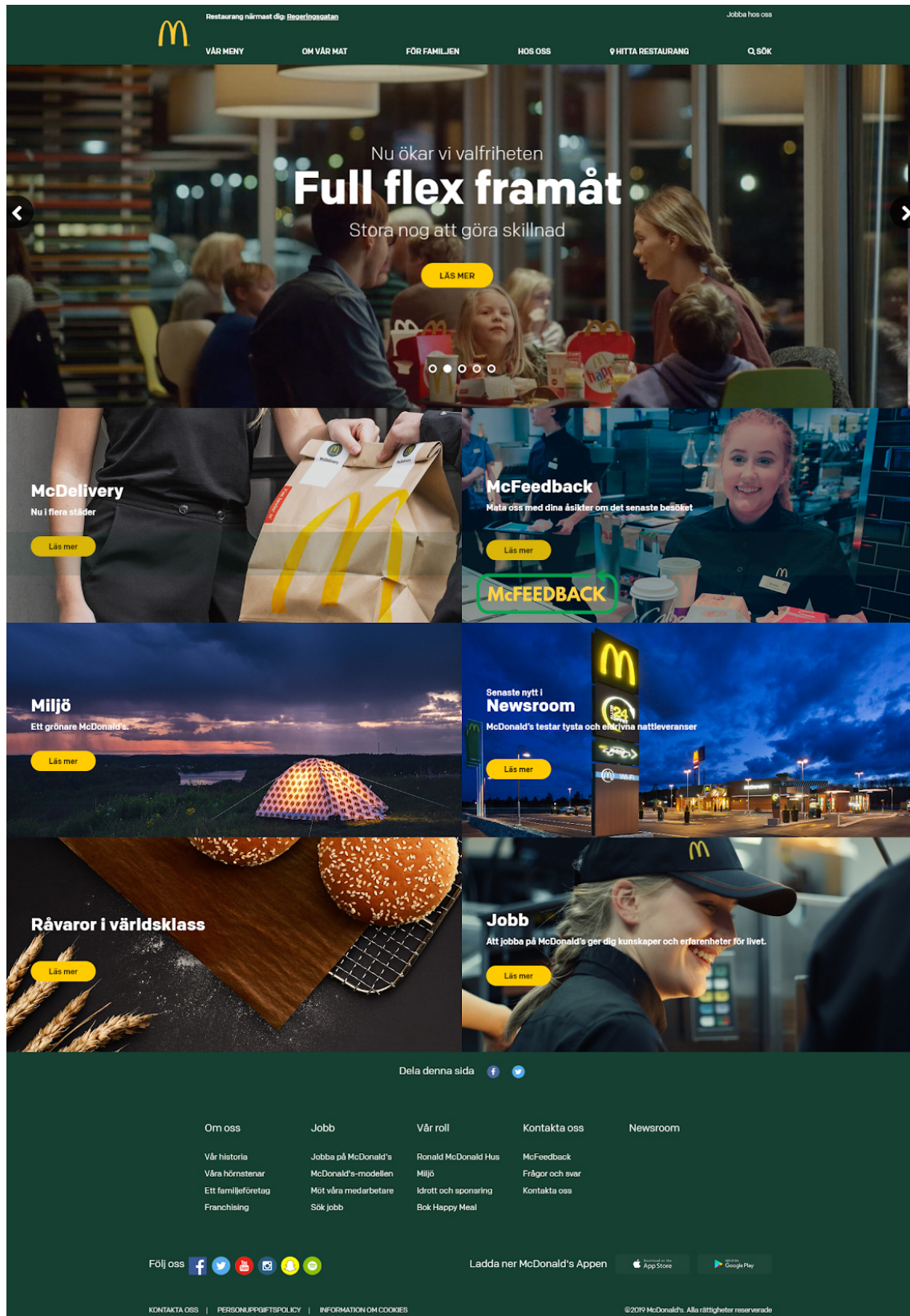


Figure 5.7: McDonald's website in Sweden



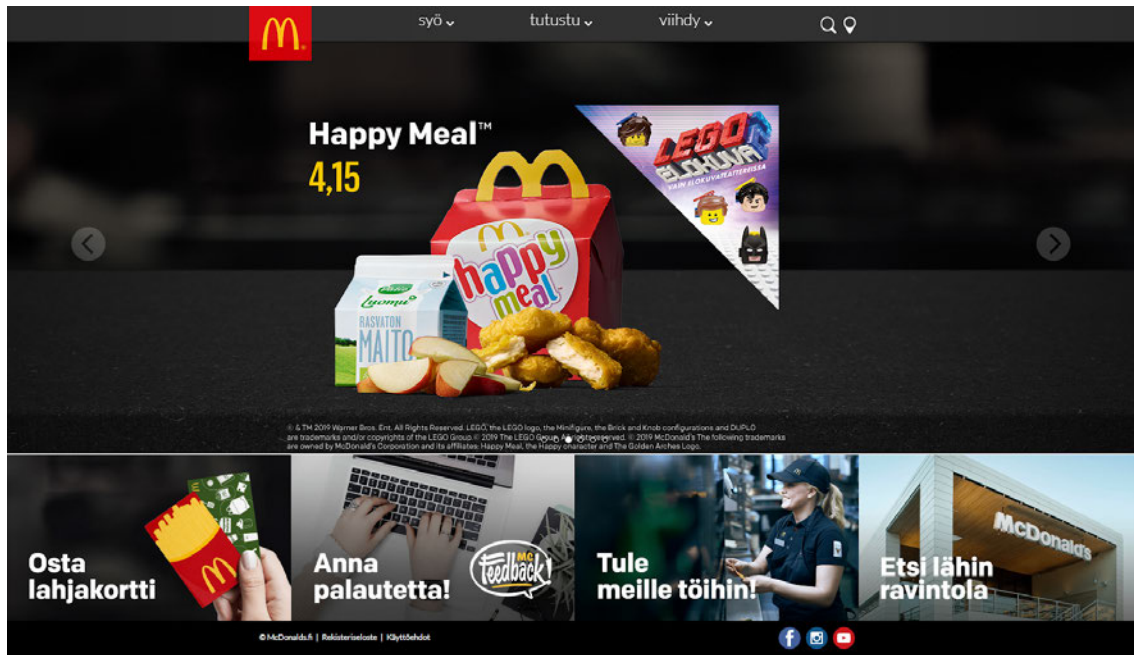


Figure 5.8: McDonald's website in Finland

### 5.1.2.2 Promotion of values

Würtz [20] indicated that website in collectivist cultures prefer apply images related to family and friend time and people in good body shape, while in individualistic cultures, people tend to use pictures represent values about freedom and private time. It is somewhat surprising that none of the website display any image related to collectivist values in HC cultures. Websites in mainland China, Hong Kong and Korea mainly show food products without people. Only few images contain family time and teamwork values are illustrated In Japanese website.

The most surprising aspect is that spending time with family and friend values are represented on websites in Denmark (Fig 5.5), Sweden (Fig 5.7) and Norway (Fig 5.6). It can be seen that these website emphasize the happy moment with friends, colleagues and family.

### 5.1.2.3 Individuals separate from or together with the product

As described in the literature, Würtz [20] believes that relationship between people and products are highly important in HC cultures, that individuals toward and offer the products are common in HC cultures. Meanwhile in LC cultures, products are more like to display separated with people. As can be seen from the screenshots, things changes in 14 years. On one hand, there are only images of products show in all the four HC cultures' websites (Fig 5.5, Fig 5.6, Fig 5.7, Fig 5.8). There are some individual pictures in Japanese website, but they are not related to the primary products. One the other hand, products in both Swedish and Finish websites displayed with individuals. Especially as shown in Swedish website, that pictures about individuals toward, hold and receive products are in the most significant position

(Fig 5.6). This finding is contrary to Würtz's studies which have suggested.

### 5.1.2.4 Level of transparency

Würtz [20] believed that in LC cultures, information display on websites is clearly and direct, easy to be found and visited, while in HC cultures, information is hide and require users to spend extra effort to retrieve it. In contrast to Würtz's findings, however, no evidence of the same situation was detected. It is indeed that in Scandinavian area, websites apply the same strategy to design menus and display information. It can be seen from the screenshots that Denmark (Fig 5.5), Sweden (Fig 5.7), Norway (Fig 5.6) and Finland (Fig 5.8) follow the same design pattern for their menus and fat footer on the homepage, provide detailed and clear information that users can find the content they are looking for effectively, which consistent with that of Würtz [20]'s result. However, all the websites belong to HC cultures show a totally opposite result that has not previously been described. Websites in China and Japan apply a similar main menu on the top of the site, with clear categories that users can easily find the content they want. Hong Kong and Korean websites use a sidebar on the left of the websites with bold and clean fonts. In both HC and LC cultures, websites use hierarchical menu and requires mouse-overs to explore content, but there is no ambiguous content that requires users to search through exploration in both HC and LC cultures.

### 5.1.2.5 Linear vs. parallel navigation on the website

Websites design in China, Japan and all the Scandinavian countries is tabular and functional, also break the rules to that of Würtz [20] who found only HC cultures prefer linear design. In other Asian websites, the result matches the observed in Würtz's study, that they use the layer-upon-layer look that the products are integrate with the background as a whole, menu and other sections are cover above.

Another unanticipated finding was that all the websites, from HC to LC, open links in the same window, contrary to Würtz's study [20] that HC websites tend to open up links in a new window.

Furthermore, fat footer can be found in three of four Scandinavian websites, except the one in Finland. But in Asia, only Japanese website apply the fat footer, none of the other three use it.

## 5.1.3 Summary

Together these results provide important insights into McDonald's website design in 2019. The design pattern changed since 2005, and it seems there are no significant difference between these two cultures. It is difficult to list the differences between the two cultures as Würtz [20] did in his study.

However, some other new evidence was found. For instance, we can see in LC cultures, designers tend to use more dark color over a large area on the pages (Fig 5.5,

(Fig 5.6, Fig 5.7, Fig 5.8), compare to the websites in Asia, using bright colors in a whole (Fig 5.1, Fig 5.2, Fig 5.3, Fig 5.4). Moreover, it can be seen that the layout design and the content is more density in HC cultures, while the design is more simple with less text in LC cultures. Three column layout design is the most common use layout in Asian websites. In China, four column layout design is applied, and in Japan, each column contains four small columns for more information. LC culture are more used to simple and less columns design. Two column layout design is the most common style in Scandinavian, although the website in Finland shows a four columns layout, they are for less important information showed in second line, and there are only five columns in total in this page (Fig 5.8).

The observations discussed for website in 2019 above are summarized in Figure 5.9.

parameter	Tendency in HC cultures	Tendency in LC cultures
<b>Animation</b>	Japanese website has moving products.	No animation
<b>Promotion of values</b>	Biggest pictures are for products without people. Can see lifestyle (high quality and sustainable) in Chinese and Japanese websites.	Have more people's face and group of people than HC culture. Social value is on the first screen in Swedish website, but not in main menu in all the other Scandinavian websites at all.
<b>Individuals separate or together with product</b>	Chinese and Japanese websites have products with people	Can see lifestyle pictures in Swedish, Finland, and Norway's websites.
<b>Levels of transparency</b>	Chinese website uses heavy text in menu, only icons for main menu. Japanese website is the only website doesn't use second level menu, only text Korea and Hong Kong use a very few pictures in menu, mainly text. But for main pictures, use ambiguous titles without special buttons for each column in Chinese website.	All the websites use big pictures and very litter text for the menu. All the Scandinavian websites except Finland use special buttons for each column.
<b>Linear versus Parallel</b>	layer-upon-layer design for websites in Hong Kong and Korea	tabular and functional
<b>Color</b>	Use more bright color White background and yellow, few black	Black background with few yellow and red. Few white.
<b>layout</b>	4 columns - 5 columns in China, Others use 3 columns	Most 2 columns Full-screen design
<b>navigation</b>	No fat footer in china	Fat footer is popular
<b>links</b>	Open in the same windows	Open in the same windows
<b>multimedia</b>	No popups	No popups
<b>text</b>	More density text	Less density text

**Figure 5.9:** Summary of cultural differences connect to UX design in McDonald's websites in 2019

With this knowledge in mind, an initial solution for the study was generated. The results observed differ from Würtz's 2005 estimate of culture impact user's preferences. A user survey should be launched to see whether the results match those observed in McDonald's websites comparison in 2019. After that, low-fidelity and high-fidelity prototyping can be designed and evaluated separately.

## 5.2 User research

### 5.2.1 Survey

After the pre-preparation phase with the literature study had concluded, An questionnaire was sent out for the basic concept of user preferences of UX design on websites. The data was collected from 2019-February-25th to 2019-March-3rd.

#### 5.2.1.1 Participants

As the target user of <https://support.ndcsolutions.com/hc/en-us> was well-educated, full-time employer lives in cities in China and Sweden, participants were selected based on the requirement of the target user. Additionally, as the purpose of the questionnaire was to generate the general idea of the study, the quantity of the data should occur as much as possible to ensure precision and accuracy. The questionnaire was shared to employer work in Kollmorgen, people work in the industrial automation field and college students via the internet, and they submitted the answers back on an anonymous basis. The quantity of participant was balanced at 50% Chinese and 50% Swedish.

#### 5.2.1.2 Preparation of questions

The survey was created on <https://www.enalyzer.com>, as a picture-based questionnaire. The goal is to understand the basic user's preferences in China and Sweden based on the observation of McDonald's websites in China and Sweden, in order to establish whether user's UX preferences have changed and what is the latest trends and developments in UX design field. The questions mainly focus on navigation style, levels of transparency, information density, brightness, products with or without individuals, layout, multimedia and links. A bilingual survey was offered in Chinese and English, in order to facilitate effective understanding by people from China and Sweden. The questions are outlined in Appendix A.

#### 5.2.1.3 Analysis of responses

The total number of responses for this questionnaire was 108, 72 of the subjects completed and returned the questionnaire, in which 36 are from China and 36 are from Sweden. For complete raw data from the 78 participants, see Appendix B .

It can be seen from the data in Figure 5.11, Figure 5.13, Figure 5.14, Figure 5.15 and Figure 5.17, participants from China and Sweden have a similar UX preference on menu, image, video, text density and link opening, which are in accord with the

latest McDonald's studies indicating that people from HC and LC cultures tend to apply a similar UX design on websites.

There are several obvious findings to emerge from the analysis. It can be seen from the data in Figure 5.10 that when asked whether they prefer to have text with or without icons on the navigation bar, 90% of the Chinese respondents reported that they like to see text with icons. Swedish respond to the same tendency but more of them prefer text without icons. Secondly, Individuals live in Scandinavian prefer dark color while Asian people like bright color more (Figure 5.12). In addition, on the question of layout design preferences, half Swedish selected four columns layout while half people like the simple layout with two to three columns, which require a future test for confirmation (Figure 5.16). What is surprising is that although information on Chinese websites is more density than on Swedish ones, Chinese participants, especially people from 21 to 30 tend to like simplify layout design rather than the complex one (Figure 5.16).

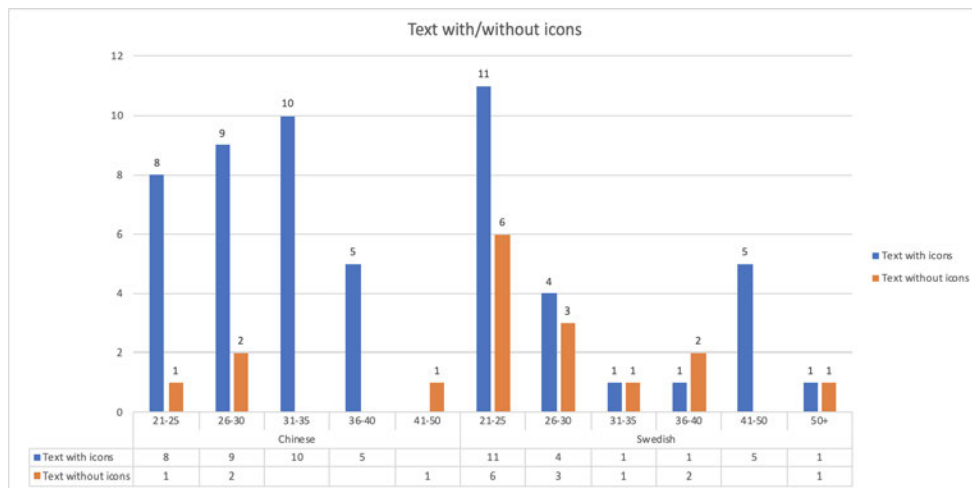


Figure 5.10: Text with or without icons

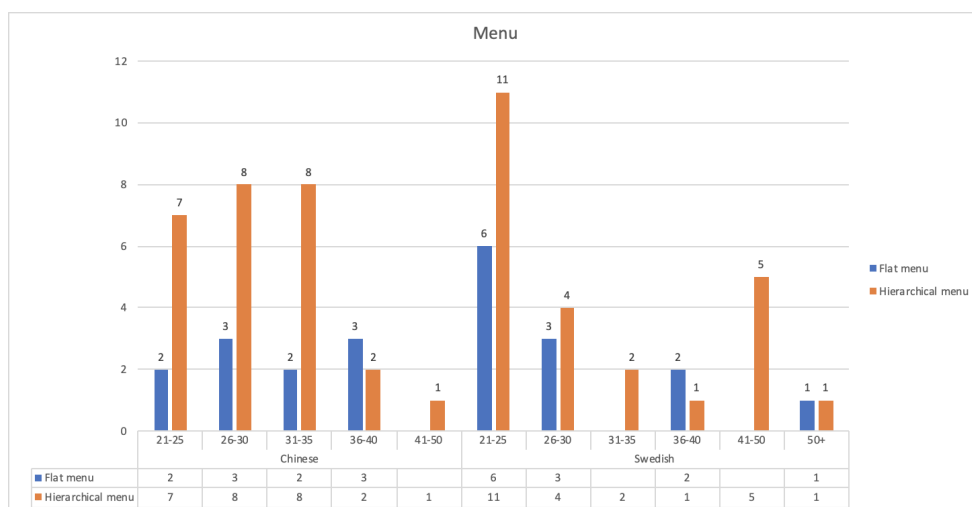


Figure 5.11: Hierarchical Menu or Flat menu

## 5. Design Process

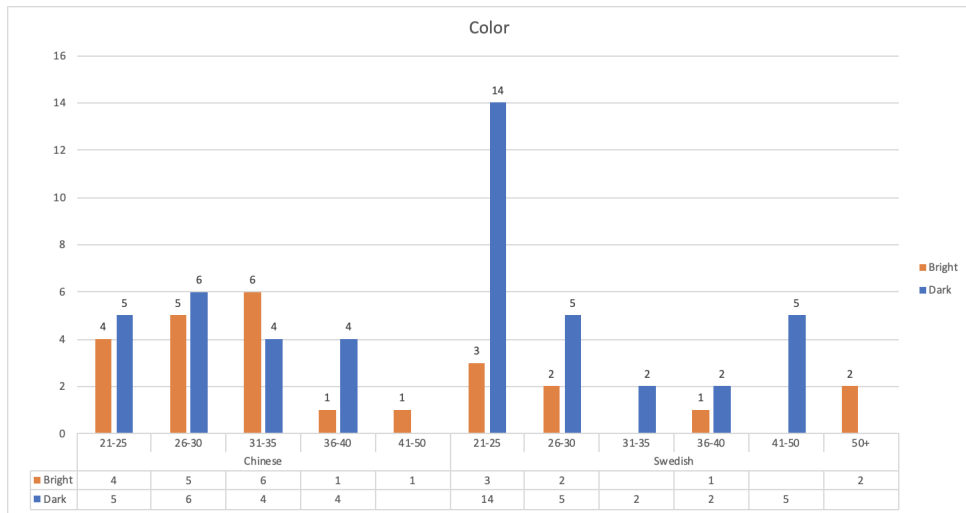


Figure 5.12: Hue preference

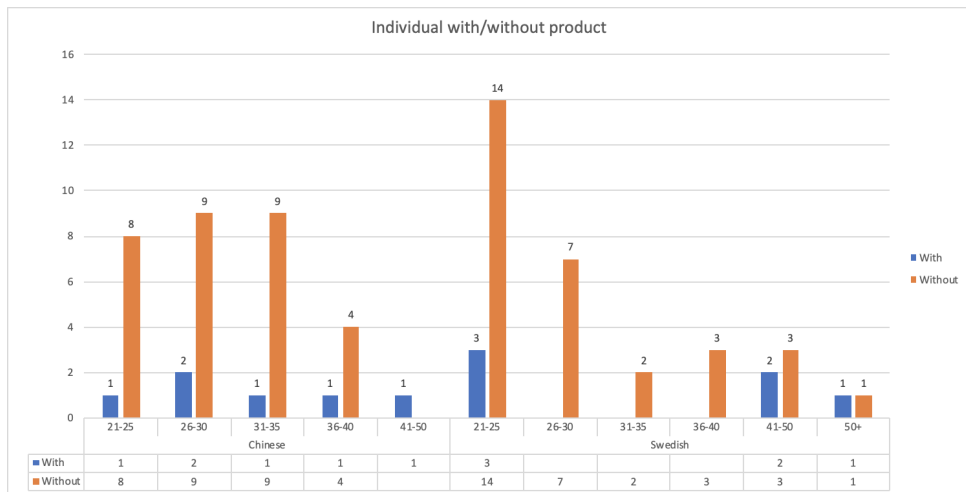


Figure 5.13: Image with or without individuals

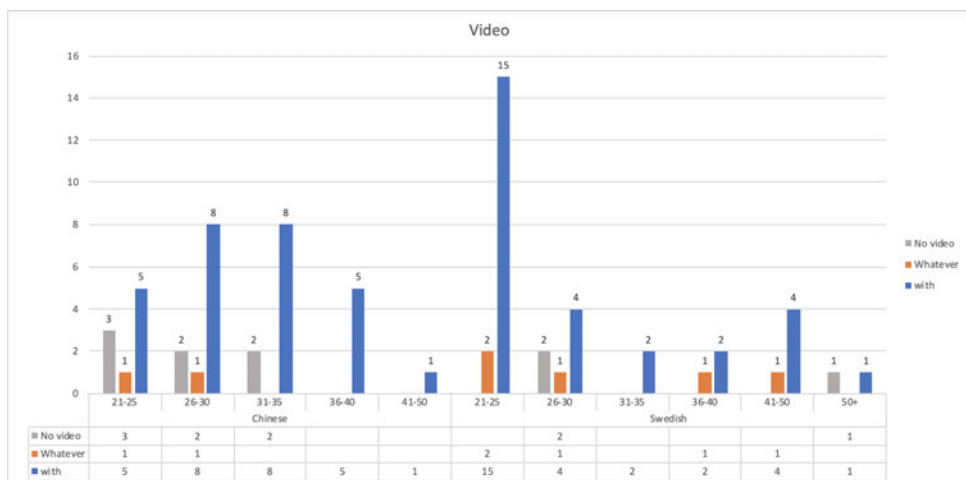


Figure 5.14: Video preference



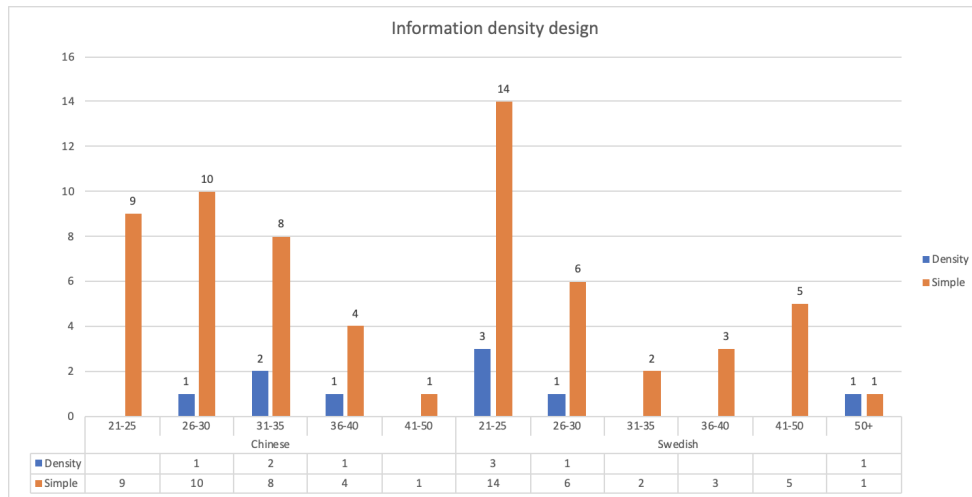


Figure 5.15: Text density preference

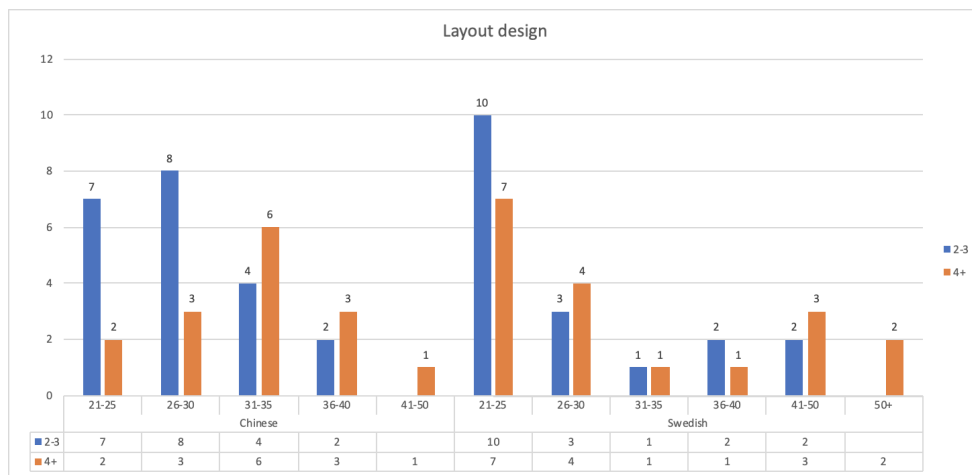


Figure 5.16: Layout preference

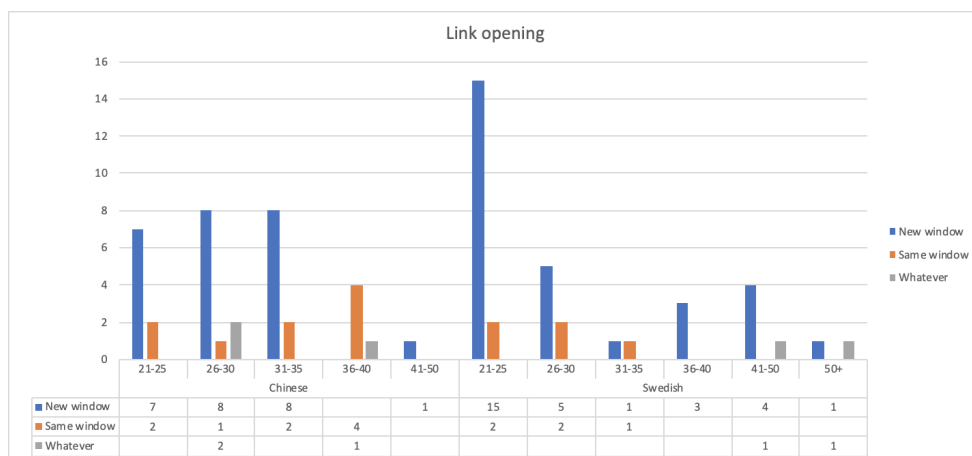


Figure 5.17: Link opening preference

### 5.2.1.4 Discussion

As mentioned in the literature study, Würtz [20] provides a clear view of difference UX design for HC cultures and LC cultures in 2003. However, it seems there is no significant UX design difference between the two cultures in 2019. Is it caused by culture changed, or are there other reasons lead to the different? A further study with more focus on usability testing with face to face interview based on prototyping design, to identify whether UX preferences in HC and LC cultures trend to reveal the convergence of views.

## 5.3 Concept ideation

In this phase, low-fidelity prototypes for Chinese and Swedish websites were created separately based on the survey results above.

### 5.3.1 Low-fidelity prototyping

Two versions of prototypes were created according to the survey results for usability testing. Two pages and a navigation bar for Chinese and Swedish were built separately. They are referenced as prototype Chinese and prototype Swedish in the following chapters, where they are further analyzed. The prototypes were created with Adobe XD, pages can interact with each other, which means users can click on a line in one page and jump to another page. All the information displayed on the pages for both prototypes are the same, as only the design was redesigned and tested. The original text was comes from the pages <https://support.ndcsolutions.com/hc/en-us/>.

As can be seen from Figure 5.18, the home page designed for Chinese users applies a light grey color background and an overall bright color style. For the navigation bar, text with icons was designed, and for the main content, bright and colorful images were used for titles for each column. The page is a four layout design with density content. All the design style followed the Chinese participants' preferences received from the survey achieved in the last chapter. The menu bar applied a hierarchical design with a dark blue color to emphasize with content is selected. A sub menu will display when the mouse is hover on any of the navigation text in the same dark blue color. (Figure 5.19).

For the request a submit page, it can be seen from Figure 5.20 that it applied the same background color, to consistent web design in every page.

These pages can interact with each other. As shown in Figure 5.21, participants can click on the text "Products" on the menu bar to unfold the hierarchical menu and browse a sub menu list. Furthermore, it will jump to the request submission page when the button "submit a request" on the bottom right corner is clicked on the home page.

Prototype Swedish also followed the survey results shown above. As half Swedish participants selected density layout design, while another half prefer simply layout design, two layouts with the same content and color style were designed for the future usability test in order to better understand Swedish user's layout preference.

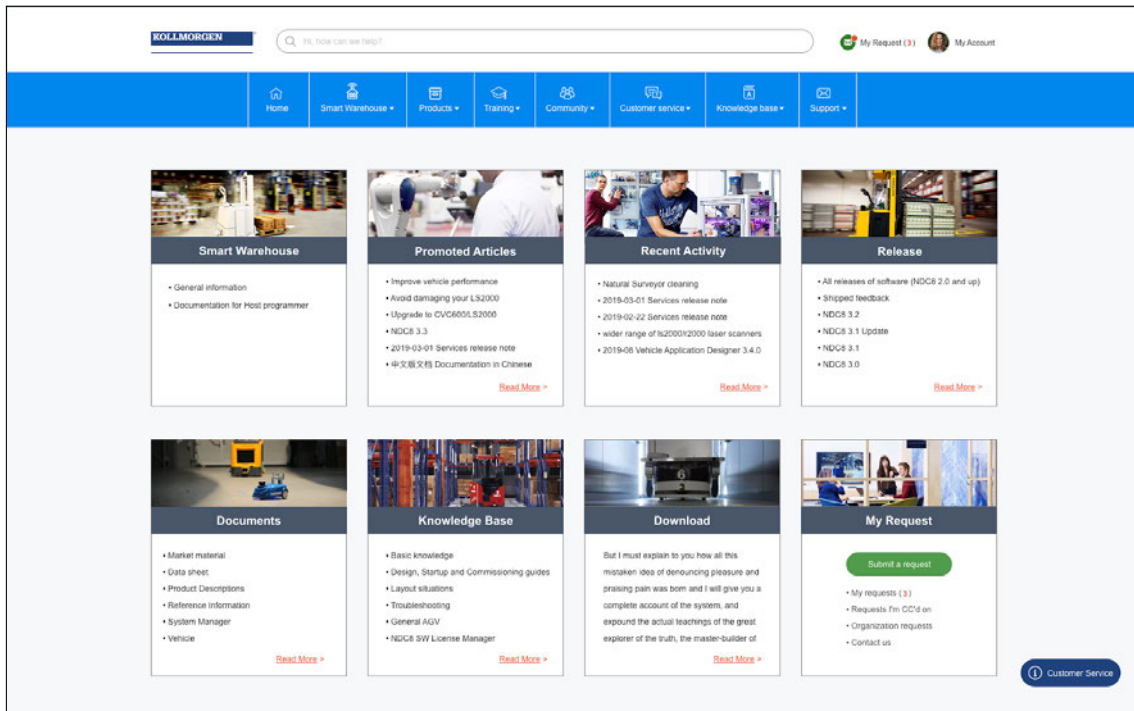


Figure 5.18: Home page of prototype Chinese

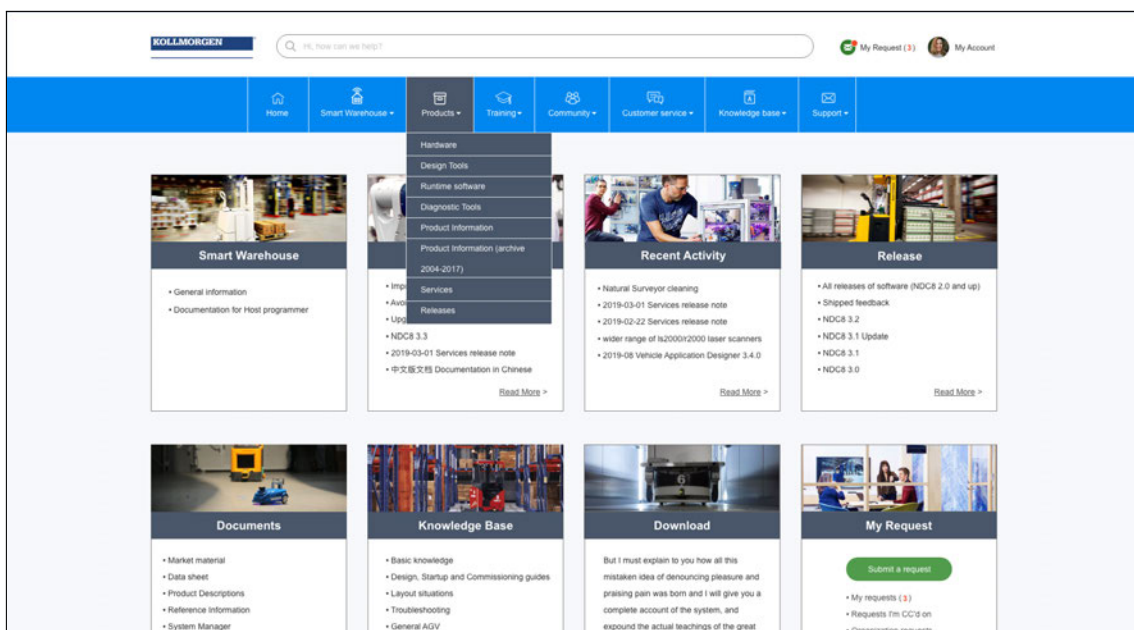
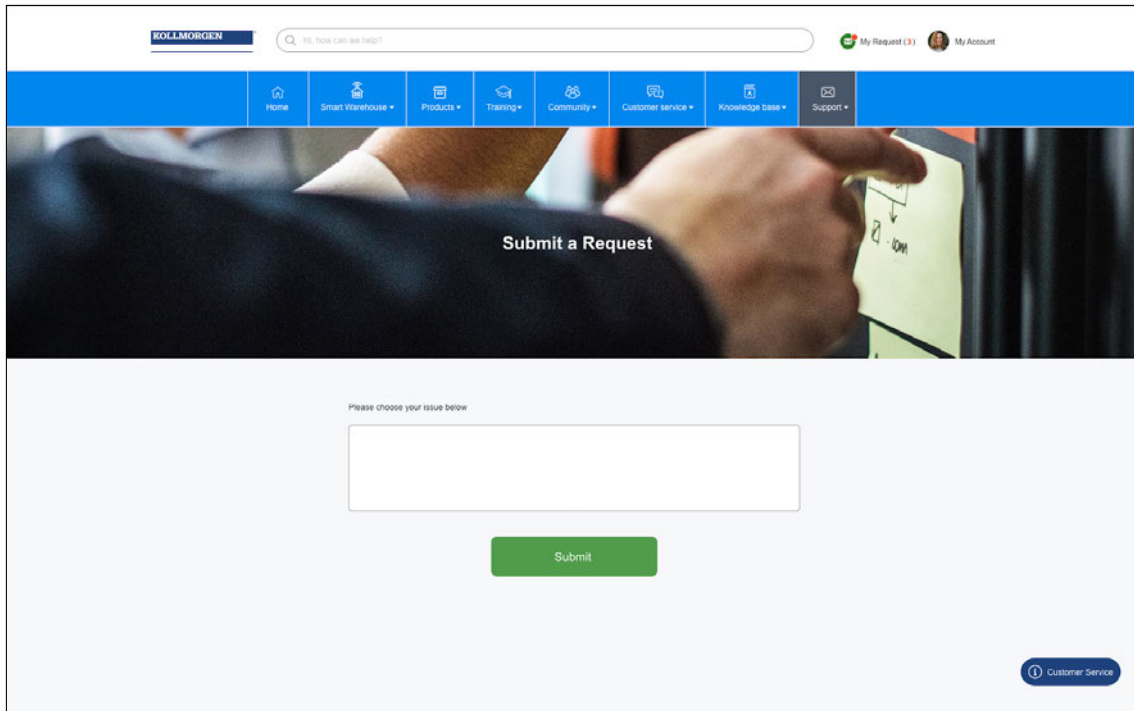
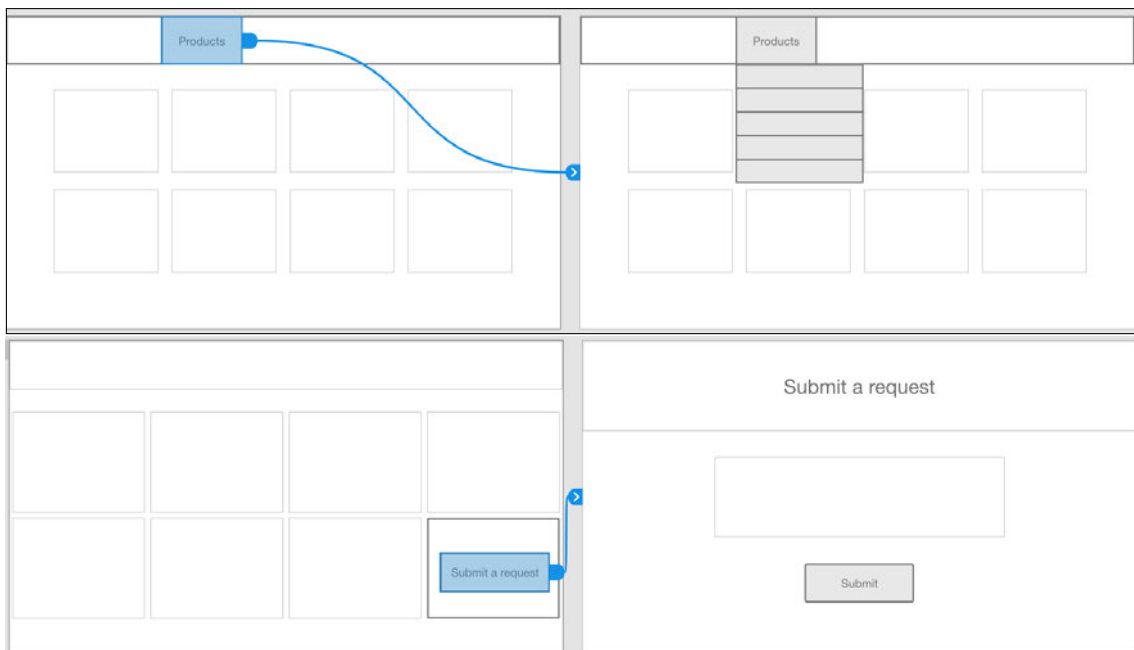


Figure 5.19: Menu bar for Chinese website

## 5. Design Process



**Figure 5.20:** Request submission page for Chinese website



**Figure 5.21:** Interaction between Chinese prototype pages

Figure 5.22 and Figure 5.23 show the two versions home page for prototype Swedish. It can be seen from Figure 5.22 that It is a simplistic design with a maximum of three columns on the page. And for Figure 5.23, it is a three to four column layout design. For both pages, the menu was designed with text without any graphic. And the second level menu was designed with big background image with title text below

it (Figure 5.24). For each section on the home page, dark color style background pictures were provided, with bold font format titles and action buttons with bright color covey above. All the pages apply an overall dark hue color style in order to follow the survey result for Swedish users (Figure 5.22, Figure 5.23, Figure 5.24, Figure 5.25).

The interaction between each page follows the same pattern as the Chinese prototype, that once the “products” on the menu bar is clicked, the second level menu will unfold and accessible. Furthermore, click the “submit a request” button on the bottom right corner can visit the request submission page as well (Figure 5.26).

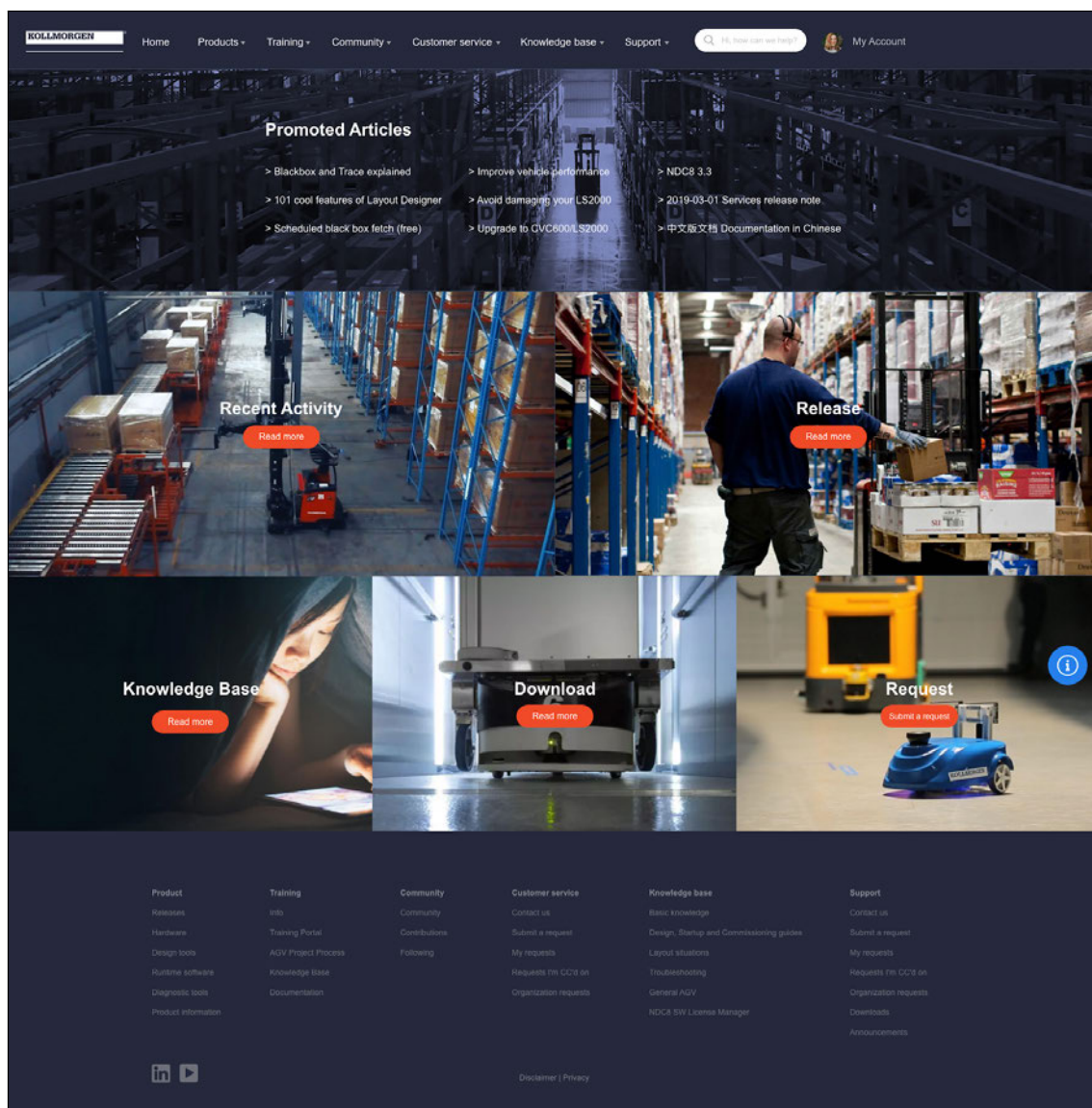


Figure 5.22: Home page-1 of prototype Swedish



## 5. Design Process

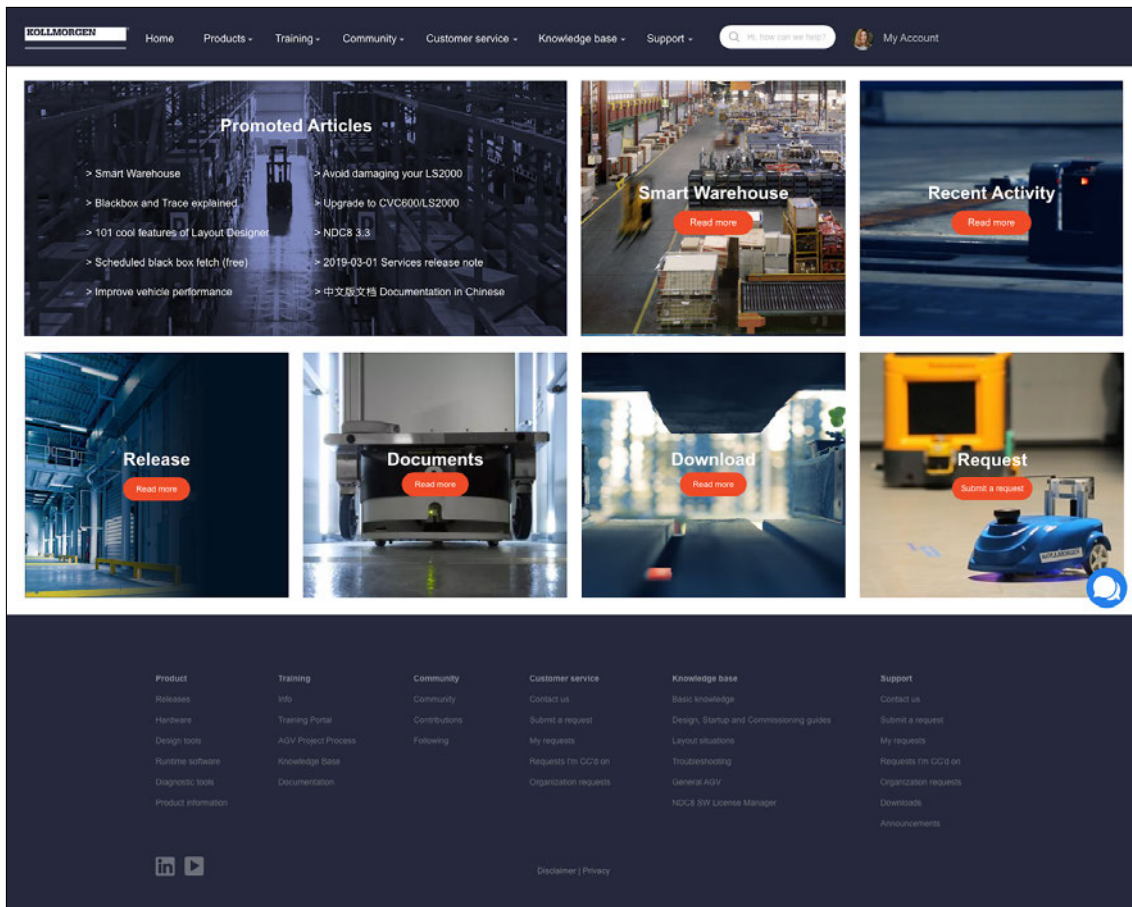


Figure 5.23: Home page-2 of prototype Swedish

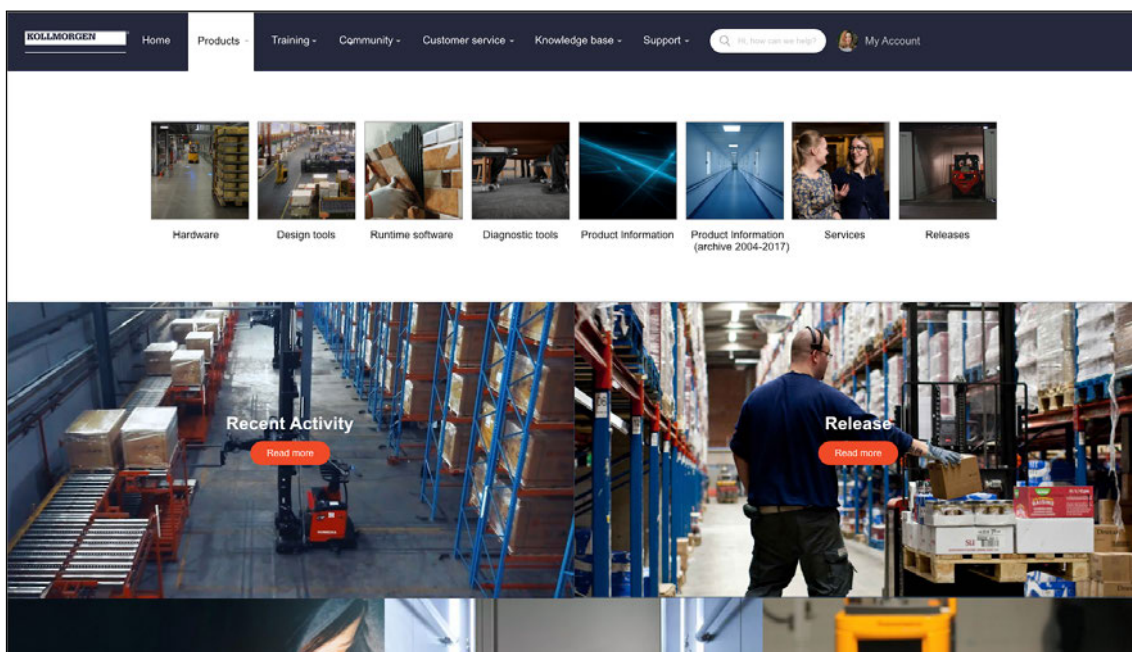


Figure 5.24: Menu bar for prototype Swedish

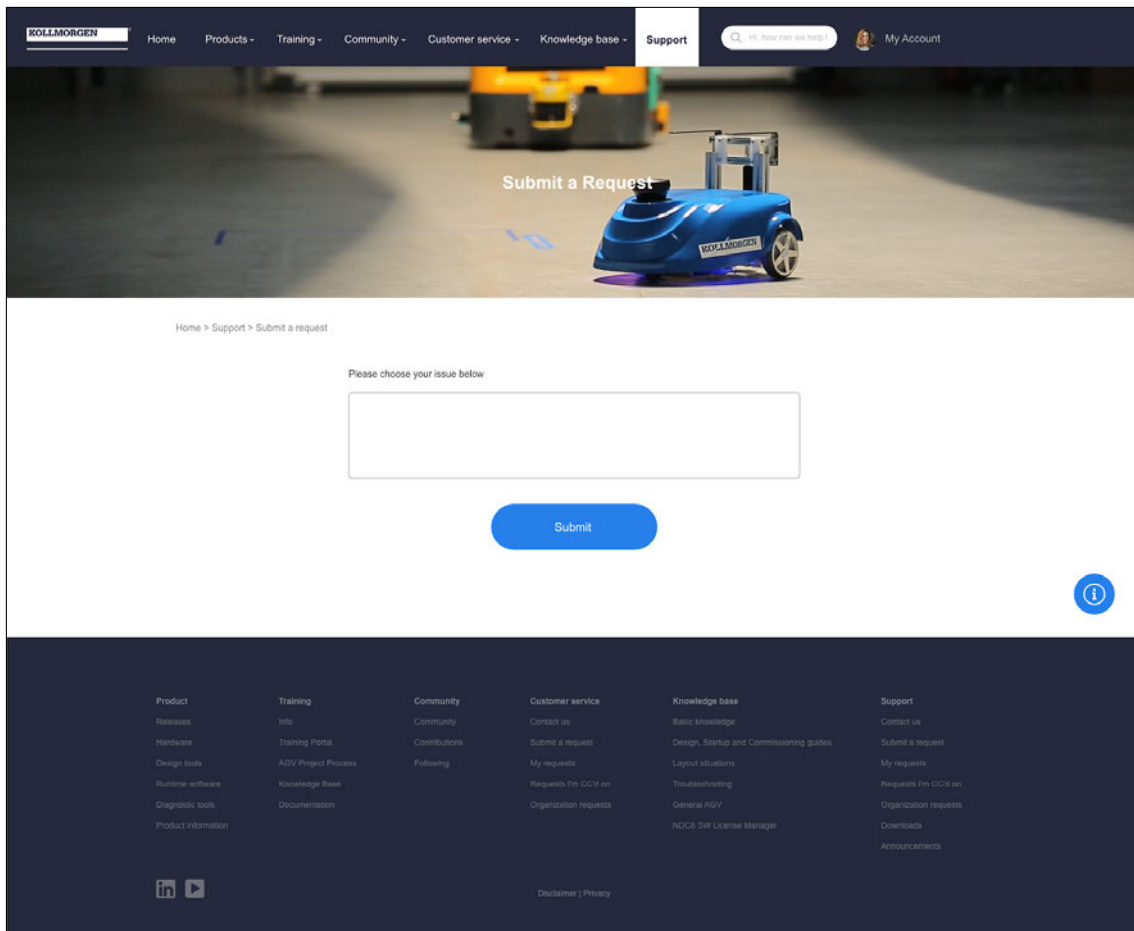


Figure 5.25: Request submission page for prototype Swedish

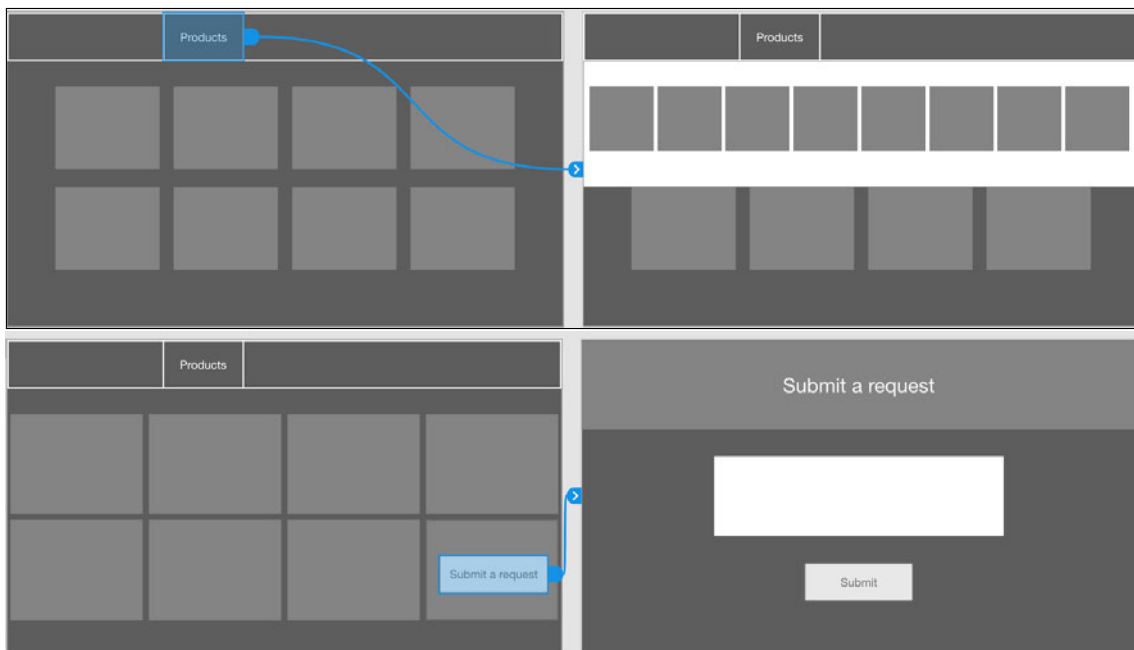


Figure 5.26: Interaction between Swedish prototype pages

## 5.4 Pilot testing

After the prototyping preparation, a pilot usability testing with an interview was held. The purpose of the pilot testing was to find out problems and the uncertainty issues about the prototype, questions or the testing process. It made sure the testing process, including the time consuming, the questions and the design itself was appropriate. With the feedback and comments received from participants, the testing can be modified and improved. After evaluating the prototypes and questions, the formal usability testing was launched in Kollmorgen office. Eight company colleagues were recruited as participants, conducted the testing, attended the following interview and fill up a feedback survey at the end of the testing.

### 5.4.1 Participants

Two interaction design master students, who are referred to as student A and student B in this chapter were recruited as the pilot testing participants. All the data collected in pilot test was anonymous (Figure 5.27).

	<b>National</b>	<b>Age group</b>	<b>Education background</b>
<b>Student A</b>	Sweden	20-25	Interaction design master student
<b>Student B</b>	Sweden	26-30	Interaction design master student

**Figure 5.27:** Information of pilot testing participants

### 5.4.2 Prepare tasks and questions

Student A was required to accomplish the tasks on prototype Swedish and later student B performed the same tasks on prototype Chinese. After they finished the tasks, they were asked several questions based on their behavior during the testing process. They were also expected to fill out a Likert-type scales [37] survey after the interview.

The first task was to find “Design Tools” on the home page. Participants were told that “Design Tools” was on the navigation bar under “Products”. The second task was to submit a request on the home page. The purpose of the two tasks was to observe whether the UX design of the prototypes was in a natural, understandable and logical order and whether people can accomplish the tasks in a minimize and efficient way.

Below is a summary of the questions in the survey:



Do you think the web pages look good over all?	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
Was it difficult to achieve the given tasks?					
Does the website easy to navigate?					
Were you confused while performing the tasks?					
Are there any improvements that you feel we could make to the website?					

Figure 5.28: Questions for the pilot testing

### 5.4.3 Feedback and responses

Below is the survey answers received from student A and student B.

Student A - answer basis on Prototype Swedish	
Do you think the web pages look good over all?	Agree
Was it difficult to achieve the given tasks?	Agree
Does the website easy to navigate?	I don't know
Were you confused while performing the tasks?	Agree
Are there any improvements that you feel we could make to the website?	No comments

Student B - answer basis on Prototype Chinese	
Do you think the web pages look good over all?	Strongly disagree
Was it difficult to achieve the given tasks?	I don't know
Does the website easy to navigate?	Strongly disagree
Were you confused while performing the tasks?	Agree
Are there any improvements that you feel we could make to the website?	The overall design looks ugly, boring and dull. I do not like everything about the UI at all. It looks more like a platform rather than a website. I do not feel satisfied when I visit this website.

Figure 5.29: Answers received from participants

### 5.4.4 Result analysis and evaluation

Student A suggested that the task requirements can be more clear to avoid confusion. As student A thought the submit request task followed the first task, that participant should click in some place in the navigation bar to another page to achieve the task. Student A was confused that spent time searching on navigation bar but found nothing. In the final test, the question was modified to be more clear that participants can search in the whole page to accomplish the task.

The most surprising aspect of the testing results was the feedback received from student B. As the UI aesthetics did not meet his expectations, he left sharp criticisms only relative to the interface design. Although he was reminded that aesthetic was not included in the testing, he argued that the UI design should be modified to meet the user's expectations, otherwise user would feel tired of the UI and do not have the patience to visit it in a long term. Prototype Swedish was displayed to him after the testing because it was difficult to receive any useful feedback based on the Chinese version. Student B strongly agreed that prototype Swedish looks much more comfortable and acceptable, and he also had the motivation to discuss the UX part and continued the interview. This experience sent a message that aesthetic matters a lot in website design. Users look forward to a website that at least has an average mass aesthetic appreciation, otherwise they may refuse to visit it even if the UX part is acceptable.

Based on the feedback and comments received from the two participants, it is critical to reduce possible prejudice and errors caused by aesthetics related issues, make sure participants could focus on the UX testing rather than be distracted by the UI design. Moreover, it is also important to take account of quantitative results in the formal usability testing. It was noticed that it was difficult to measure the prototype Chinese and Swedish when they applied different pictures and content. Thus, prototype Chinese and Swedish were modified to balance the consistency in both UI design and content.

The new prototyping design can be divided into three groups: the overall light or dark tone comparison group (Figure 5.30, Figure 5.31), navigation text with or without icons comparison group (Figure 5.32, Figure 5.33, Figure 5.34, Figure 5.35) and layout comparison group (Figure 5.36, Figure 5.37).

Each group contains two prototypes, and participants were supposed to figure out the one they like more. As can be seen from the prototyping listed below, images and content applied on every page are exactly the same in all the comparison groups. In the overall light and dark tone comparison group, same images with different tones are applied. For layout comparison group, same images and text are used but the position of sections are changed. In navigation text with or without icons comparison group, images and text keep the same size, shape, tone and position. Applying the same pictures and content can reduce the preferences due to the quality of the pictures and content, make sure participants can focus on the UX design and receive accurate quantitative testing results.

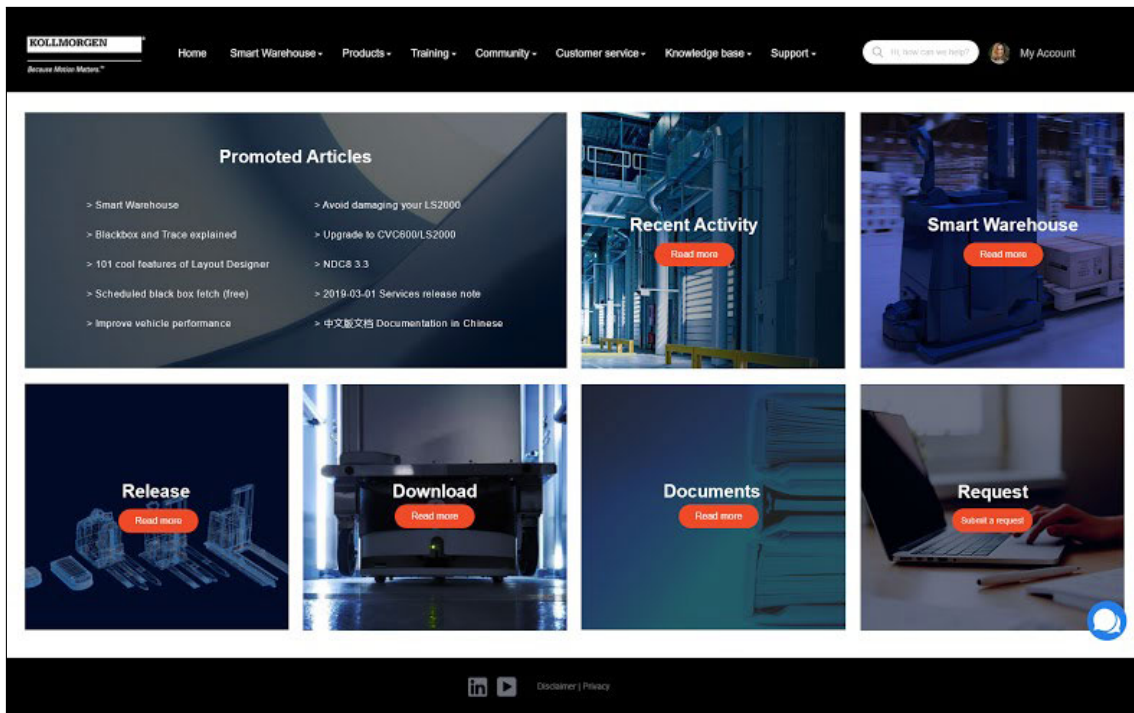


Figure 5.30: Dark tone design

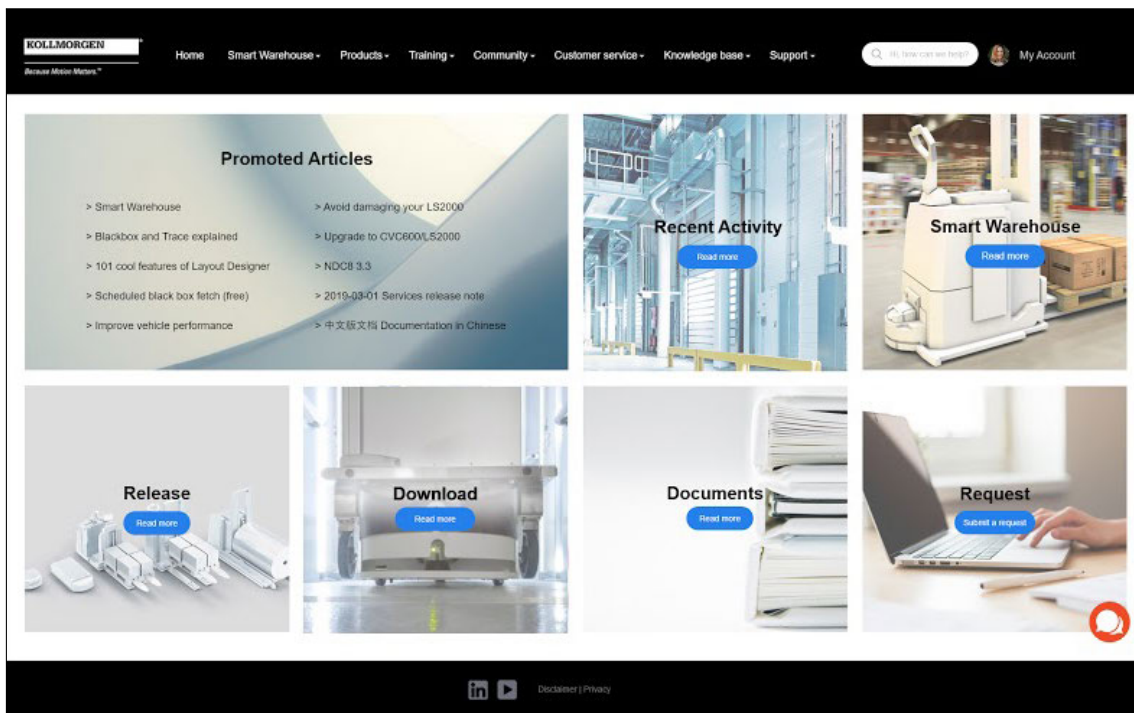


Figure 5.31: Light tone design

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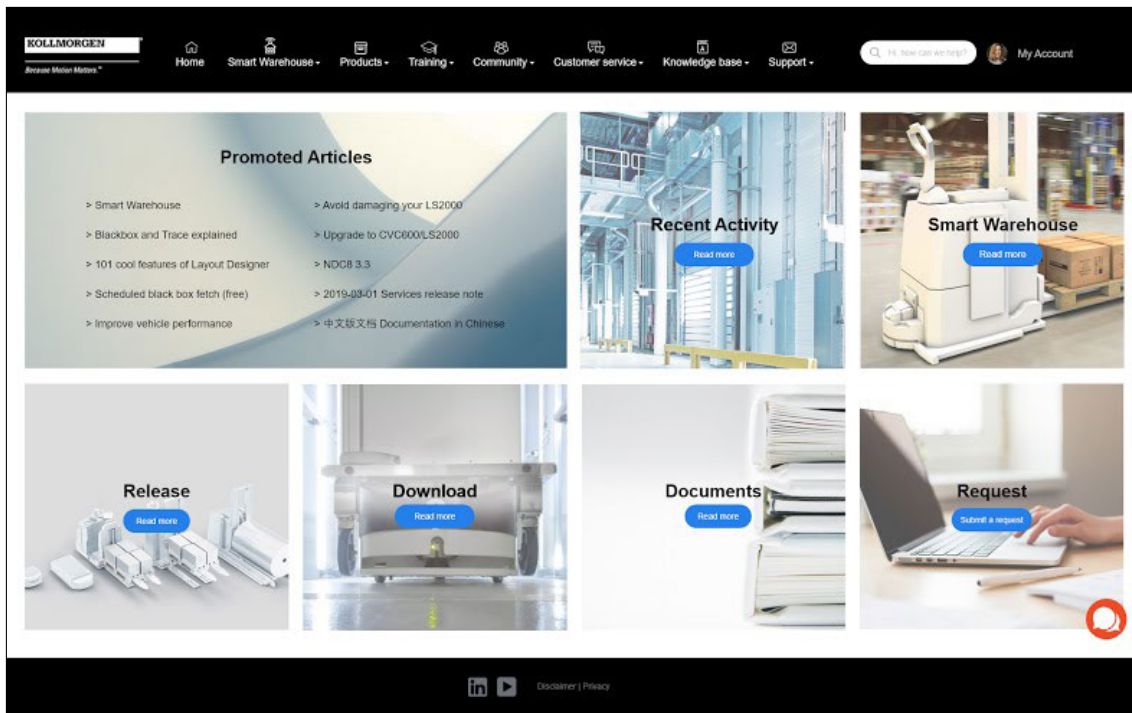


Figure 5.32: Text with icons in light tone design

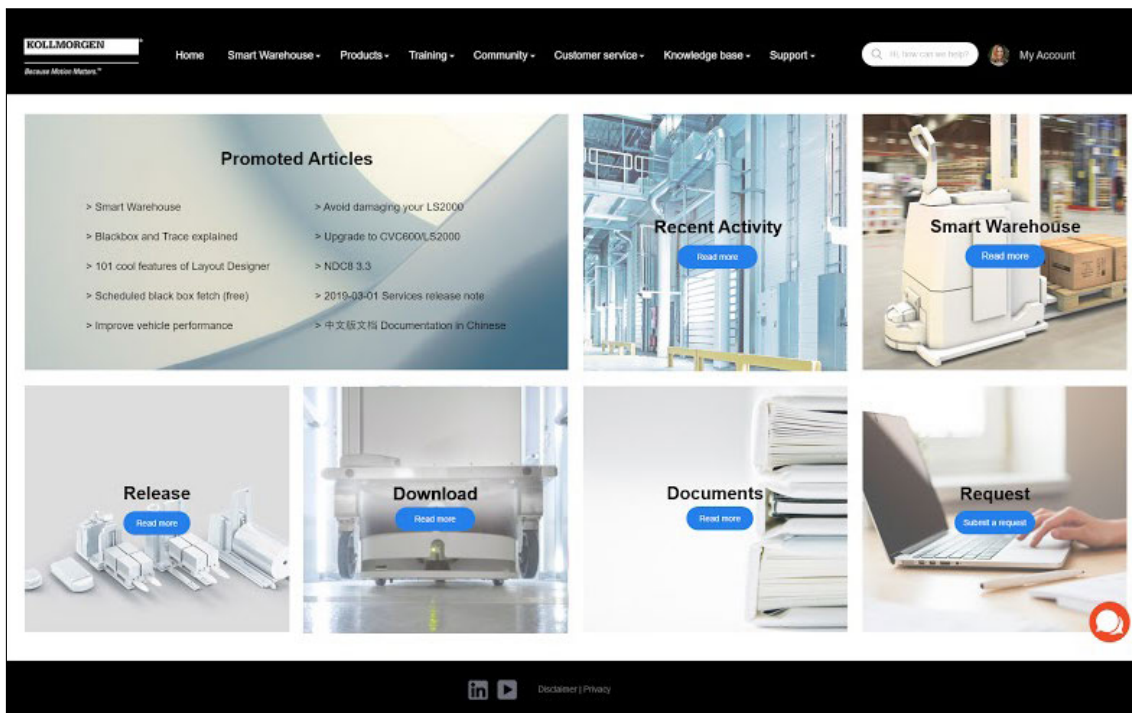


Figure 5.33: Text without icons in light tone design



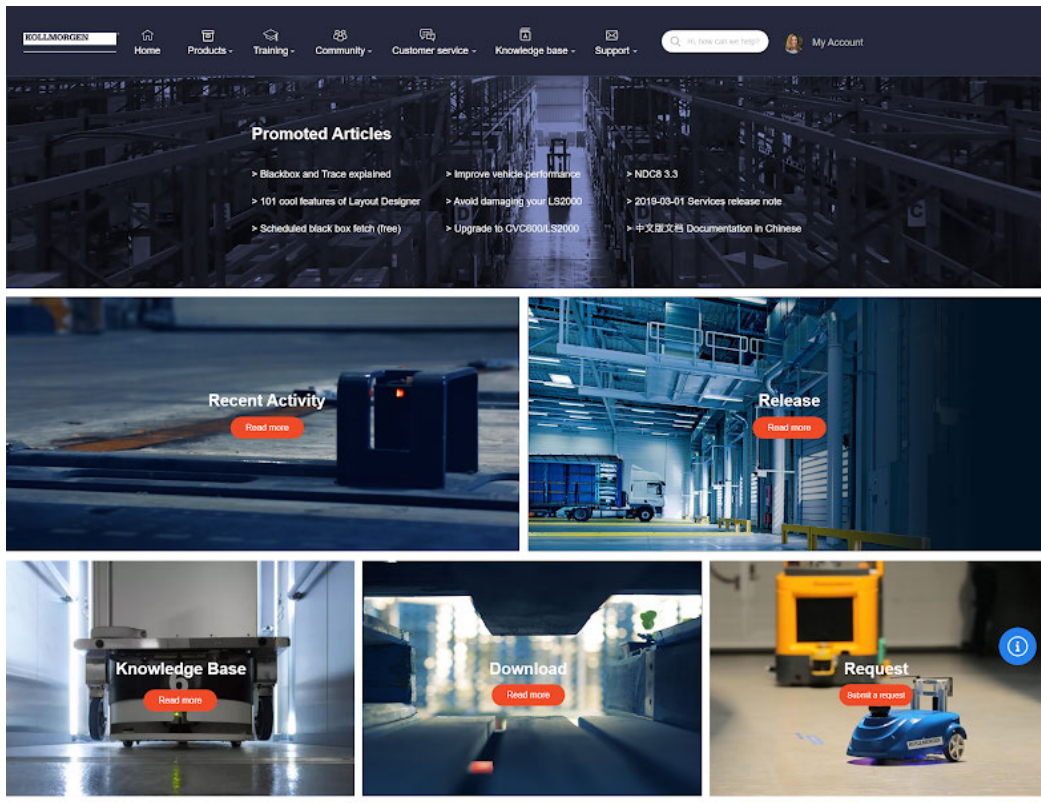


Figure 5.34: Text with icons in dark tone design

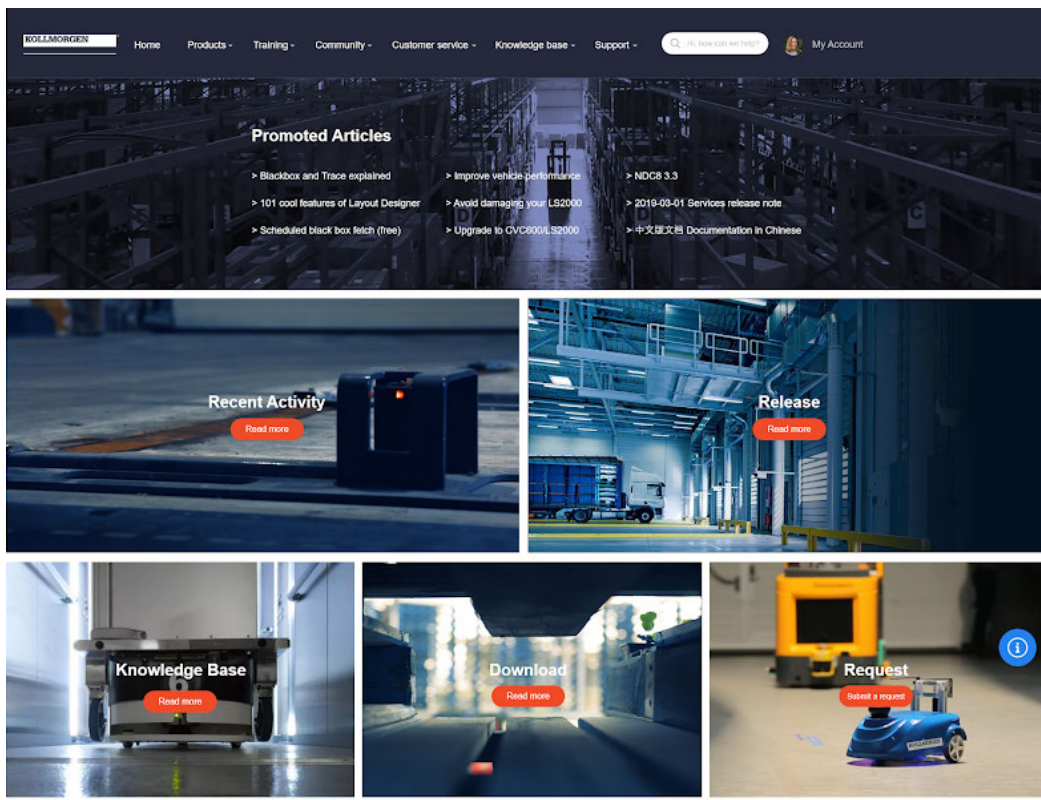


Figure 5.35: Text without icons in dark tone design

## 5. Design Process

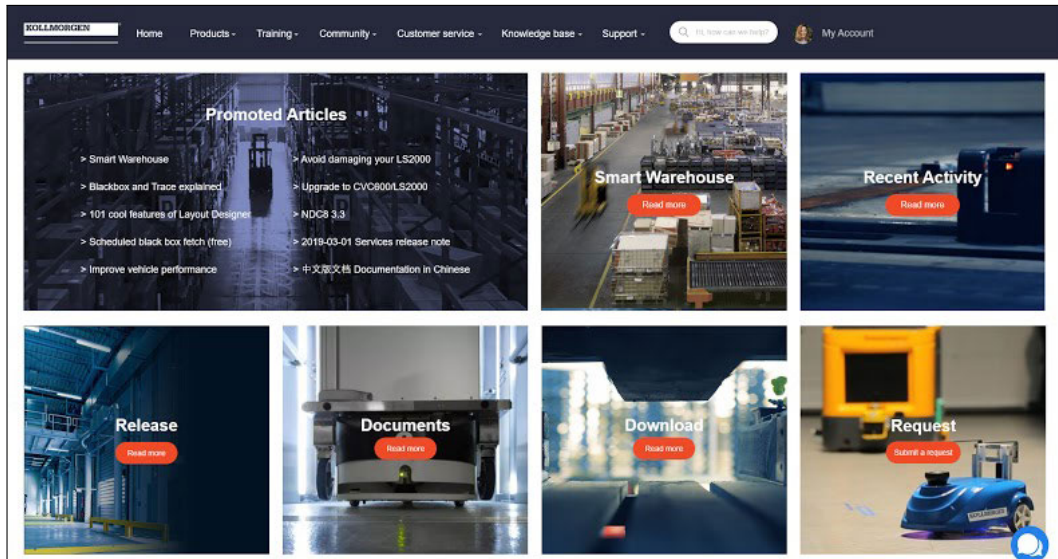


Figure 5.36: Three to four column layout in dark tone design

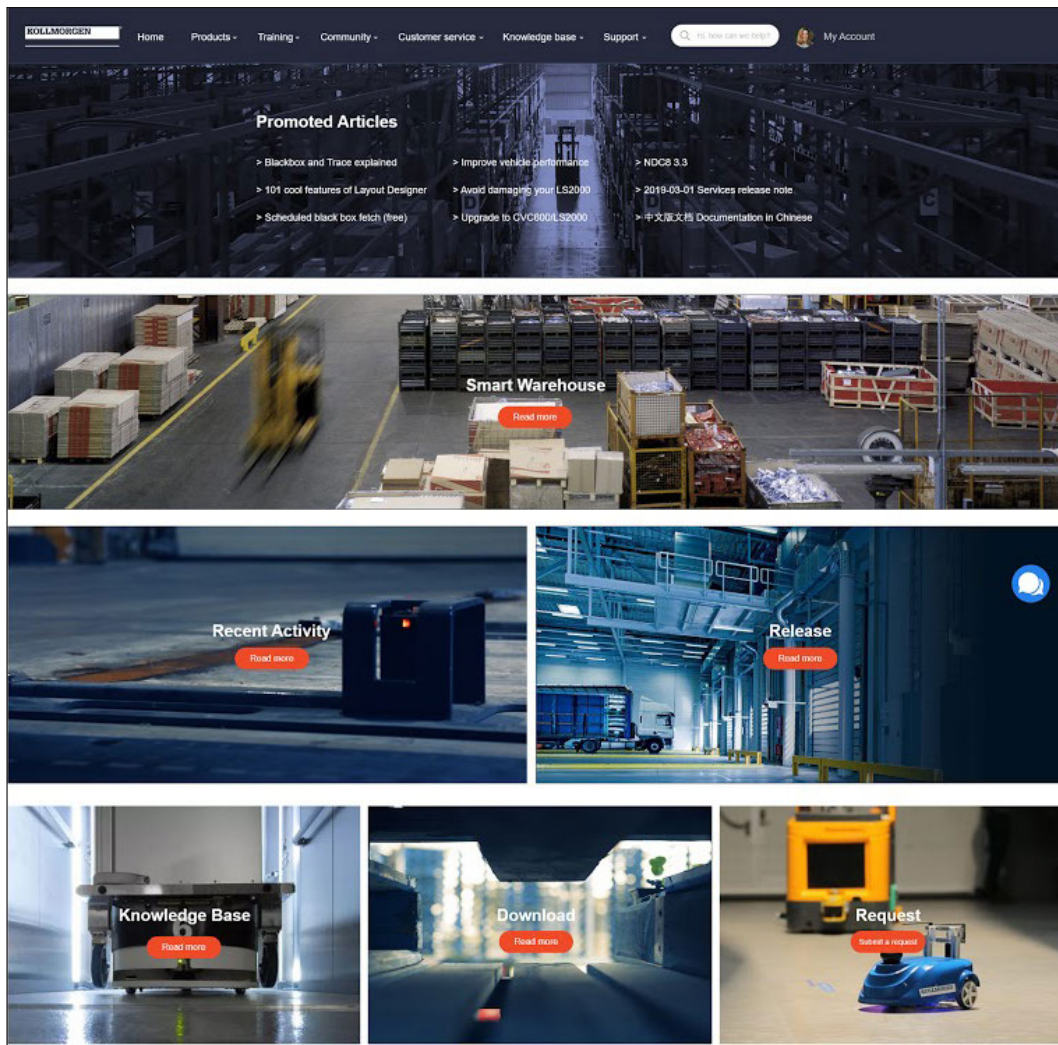


Figure 5.37: One to three column layout in dark tone design

## 5.5 Usability testing

Usability testing was conducted on the high-fidelity prototype showed above. Participants were required to answer a set of questions and then conduct two tasks on the prototype. Additionally, they need to fill out a questionnaire at the end of the testing.

### 5.5.1 Participants recruitment

A usability testing invite email was sent in Kollmorgen AB to find participants. A total of 18 people was selected to be part of the test. Nine of them are Chinese based on Chinese cities and another nine people come from Sweden live in Goteborg. The test was conducted anonymously. Table 5.38 below presents the summary statistics for participants.

<b>Nation</b>	<b>Age group</b>	<b>Education background</b>
<b>China</b>	31-35	Undergraduate
<b>China</b>	25-30	Postgraduate
<b>Sweden</b>	46-50	Postgraduate
<b>Sweden</b>	41-45	Undergraduate
<b>China</b>	36-40	Undergraduate
<b>Sweden</b>	41-45	Undergraduate
<b>India</b>	25-30	Postgraduate
<b>China</b>	31-35	Postgraduate
<b>China</b>	25-30	Undergraduate
<b>Sweden</b>	25-30	Postgraduate
<b>Sweden</b>	31-35	Postgraduate
<b>China</b>	36-40	Undergraduate
<b>China</b>	36-40	Undergraduate
<b>Sweden</b>	50+	Undergraduate
<b>Sweden</b>	36-40	Postgraduate
<b>China</b>	31-35	Undergraduate
<b>China</b>	31-35	Undergraduate
<b>Sweden</b>	31-35	Undergraduate

Figure 5.38: Participants background in usability testing



### 5.5.2 Test procedure and question preparation

Firstly, participants were told about the purpose and the general process of the testing. They also were informed that the whole testing was anonymous. Participants were asked which tone for the prototype they prefer and finished the rest of the testing with the prototype with the same tone style. They were asked to choose the design they prefer in each comparison group and were expected to answer questions related to their selection. The purpose of this step was to achieve the testing on the pages they feel satisfied, in order to get accurate answers.

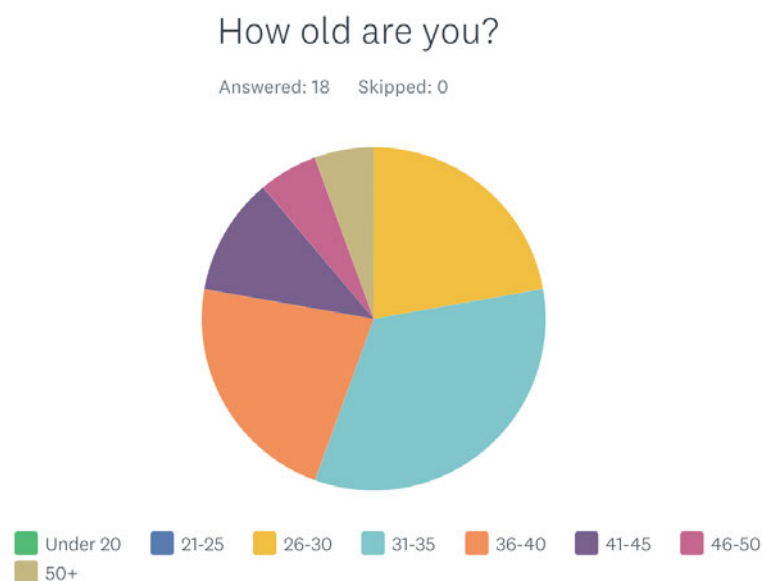
Below illustrates the questions asked during the interview:

Which design you prefer in the light or dark tone comparison group and why?
Which design you prefer in the text with or without icons comparison group and why?
(If the participants select the dark ton style design) Which design you prefer in the layout comparison group and why?
How do you open a link on a website?
Do you have any comments about the UX design on the prototype?

**Figure 5.39:** Questions asked to participants in usability testing

### 5.5.3 Test results

General background information of the participants are shown in Figure 5.40, Figure 5.41, and Figure 5.42. In total, 18 responses, 9 from China and 9 from Sweden finished the testing. 33.33% of the responses age from 31 to 35, next was age from 25 to 30 and 36 to 40, 22.22% separately. All of them earn a college degree or above. Further data presented in this section, will have been cross-referenced between different data points derived from the raw data of the survey.

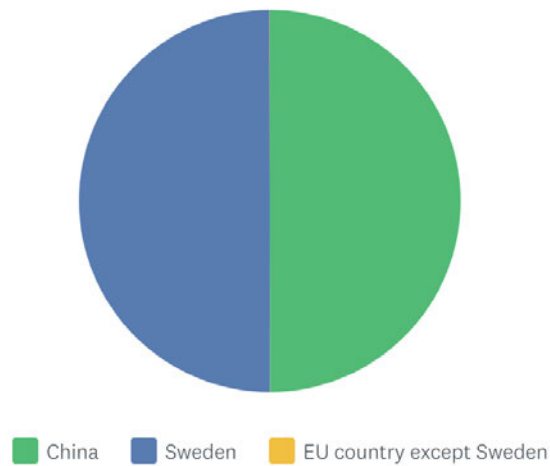


**Figure 5.40:** The education background of the participants



## What is your nationality?

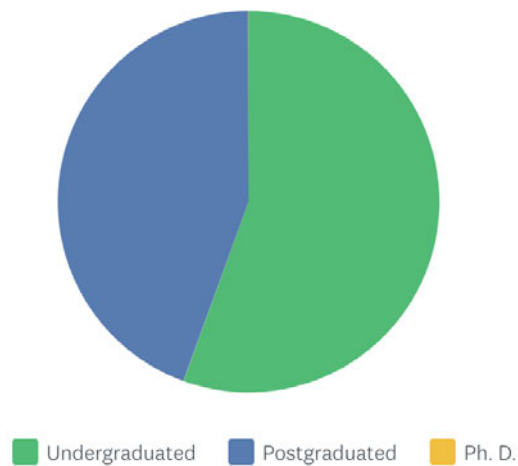
Answered: 18 Skipped: 0



**Figure 5.41:** The education background of the participants

## What's your education background?

Answered: 18 Skipped: 0

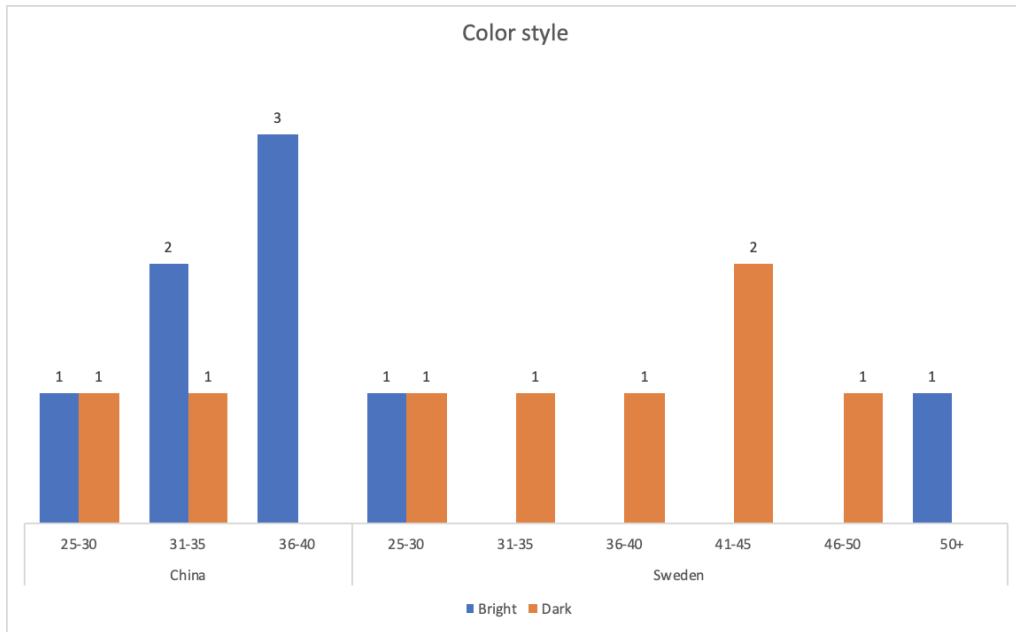


**Figure 5.42:** The education background of the participants

Unstructured interview hold during the test aimed to find out participants' preference on color tone, navigation icons, layout design and tried to explore the reason behind their decisions. Figure 5.43, Figure 5.44, Figure 5.45, and Figure 5.46 below display the results of the interview.

It can be seen that the usability testing results show similar trends as the survey results displayed. In response to color style preference, six of eight Chinese par-

ticipants (75%) tend to prefer bright tone color style, while six of eight Swedish participants (75%) considered that dark tone color style looks more comfortable (Figure 5.43).



**Figure 5.43:** Color tone preference

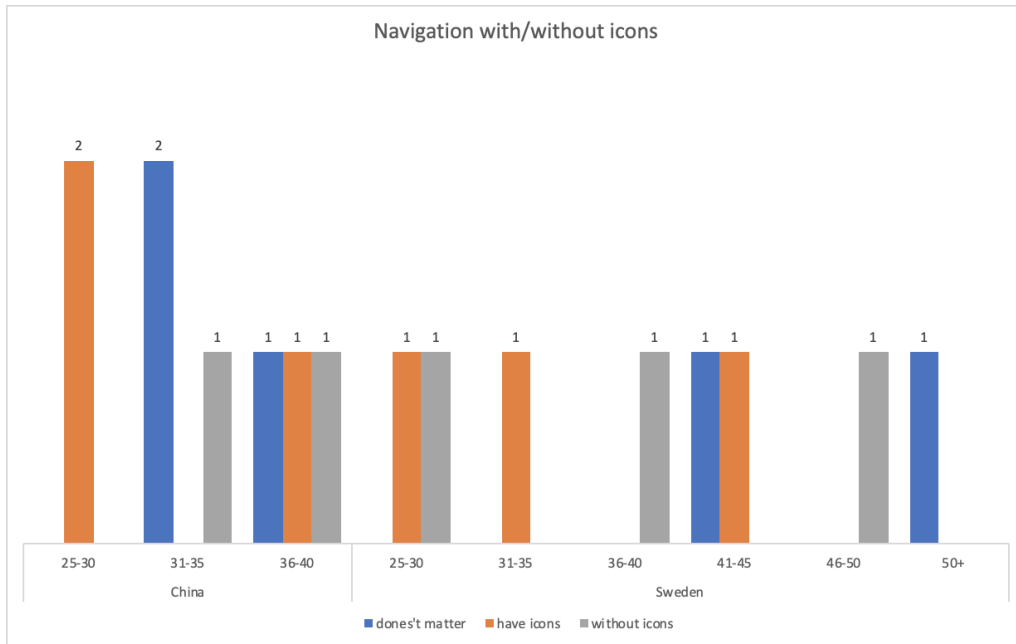
However, in the text with or without icons testing section, no significant difference between the two user groups was evident. Both Chinese and Swedish showed ambiguous results (Figure 5.44). Three participants in China (37.5%) indicated that text with icons look better, while another three participants (37.5%) did not care about whether there were icons with text or not. Swedish participants made similar decisions, that three people prefer to have text with icons and two does not want text with icons, the rest of the participants did not care whether there are icons or not.

The next question aimed to figure out respondents preference for layout design style. Figure 5.45 presents the results obtained from usability testing. Chinese participants showed an opposite layout design preference as they did on survey testing. A majority of participants (62.5%) from China indicated that they would prefer to visit the four column layout design prototyping rather than the two to three column prototyping. However, Swedish participants represent the same preference as they showed in the survey. Half of them indicated that four column design is better while another half said they prefer two to three column design.

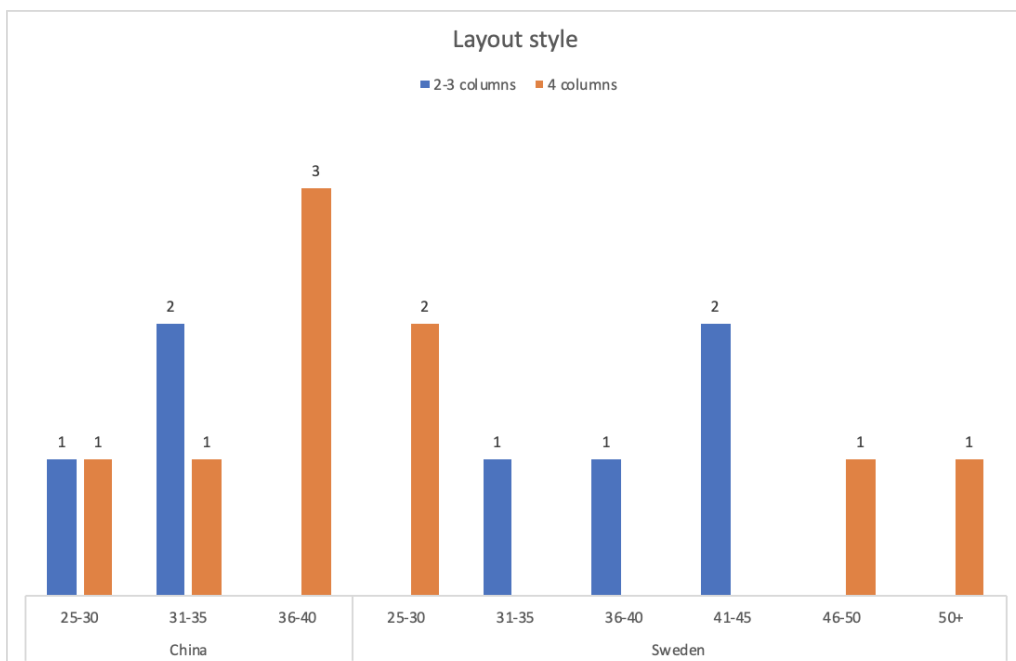
The last question required respondents to give information on how would they open links when they browser the prototyping. The results as shown in Figure 5.46 indicate that Chinese participants follow the same result pattern as they said in the survey, that they prefer to open links in a new window. However, the majority of Swedish respondents (87.5%) who responded to this item felt that links should be

opened in the same windows rather than in the new windows, totally different from the previous survey results.

During the whole process, guided questions were asked to encourage participants to give critical comments and constructive feedback on UX elements including layout, navigation, links, aesthetics, content and other web design related information participants considered are useful for the website.



**Figure 5.44:** Text with/without icons preference



**Figure 5.45:** Layout style preference

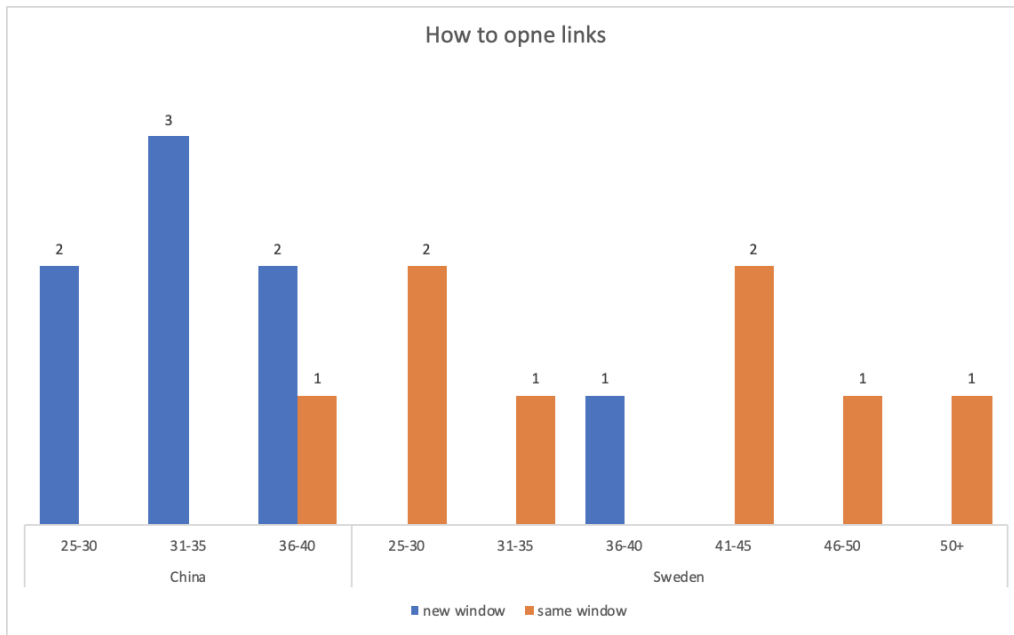


Figure 5.46: Link opening preference

## 5.5.4 Analyzing responses

### 5.5.4.1 Color tone

The color preference for Chinese users is in the opposite way as the survey result, that most of the respondents tend to select a bright color style rather than dark style. One Chinese participant commented: 'Bright color makes me feel comfortable and warm'. Other participants who prefer a bright color gave a similar answer. However, when talking about the dark tone color preference, a Swedish interviewee said: 'Dark color makes me feel comfortable.' It seems that people live in different regions have a different definition of comfortable feelings. Additionally, what is striking about the result is Chinese participants age among 25-35 have the tendency to prefer dark tone color.

### 5.5.4.2 Text with/without icons

In both cultures, for respondents who left negative comments about the icons, they believed that those icons do not relate to the text, so it is unnecessary to add icons with the text as they were used for decorative purposes only but lack of actual meaning. Meanwhile, participants who did not care about the icons develop the same attitude toward people who dislike icons, that they did not believe icons would matter the text or not as they did not have actual meaning. In conclusion, users prefer a function-oriented UX design rather than aesthetics-oriented pages.

### 5.5.4.3 Layout design

When asked about the reason to select four column layout design, Chinese participants were unanimous in the view that all the information was in one screen in the

four column design, which was effective to find the information they want without scroll the mouse. Swedish participants who selected four column design hold the same feeling as the majority Chinese testers that it gave an overview of all information on one page which was easy to find things they were looking for. As one Swedish interviewee put it: ‘I personally prefer the two to three column design, but consider this is a website for quick search information at work, the four column layout design concerted all the information in one screen that I can find information quickly.’ Another half participants considered that two to three column design made pages look simple and emphasized the important part. For these participants, aesthetics is more important than functions. In addition, there is a clear trend of interests in simple layout design between Chinese participants from 25-35. By contrast, elder Swedish above 45 years old tend to accept density layout design rather than younger users.

#### 5.5.4.4 Link opening

The majority of Chinese participants agreed with the statement that links should be opened in new windows automatically, which means links should be designed to be opened in new windows. Interestingly, all the Swedish participants argued that links should be opened in the same windows automatically, but they would open a link in a new window by right click the mouse, or use shortcut on the keyboard if it is necessary.

#### 5.5.5 Evaluation

After the interview, a survey (See Appendix C) was conducted to examine whether the prototyping conforms to the usage habits of both Swedish and Chinese users. The table below shows an overview of the survey result. For complete raw data from the 18 participants, see Appendix D.

Questions	Strongly agree	Agree	I don't know	Disagree	Strongly disagree
Overall I think the web pages look good	5	13			
It was difficult to finish the given tasks			1	10	7
The website appears easy to navigate	6	12			
I was confused while performing the tasks			1	8	9
The information displayed on the website is valuable	3	10	5		

Figure 5.47: Usability testing survey results

It can be seen from the data in Figure 5.47 that all of the participants gave a positive evaluation of the prototyping. Of the 18 participants who completed the survey, all of them agreed or strongly agreed that the pages are aesthetic looking.

When asked whether it was difficult to finish the tasks, only one respondent felt “I do not know”, all the other respondents reported that there was no difficult to achieve the given tasks. When the participants were asked whether the website appears easy to navigate, all of them agreed or strongly agreed that it was easy. In response to whether they were confused when performing the tasks, most of those surveyed indicated that they were not confused at all. Lastly, Almost one-third of the participants (28%) said that they did not know whether the information displayed on the website is valuable. As one interviewee put it: “The tasks focused on the UX rather than the content on the pages, I barely paid attention to the information displayed on the pages, so it is hard for me to say if the information is valuable or not.”

# 6

## Results

This chapter represents the final outcomes of the thesis. First, the redesigned websites for Swedish and Chinese users are displayed separately, with a description of the redesign features in each page. The redesigned website mainly includes five parts for each country: 1) Login page, 2) Home page, 3) Knowledge base page, 4) Knowledge based detail page, 5) Submit request page. Additionally, a summarized set of UX design guidelines, including orientation, navigation menu, layout, color, links, text and other features are presented for future development and extensions.

### 6.1 Redesign websites

All the redesign pages use the same content as on the original pages, some of the information follow the old position. For instance, the logo on the top left of the page, the search bar on the top middle of the page and user's name on the top right of the page, which are at the same position as on the original pages but in an aesthetic way. For all the Chinese pages, the slim footer is applied while the fat footer is applied for Swedish pages. And on the Chinese version website, links are open in new windows as default. In contrast, Swedish version website opens links in the same windows.

#### 6.1.1 Login page

Information on the old sign in/login page is fragmented, all the text and buttons display on the page without emphasis, that users need to search around the page to find the information they need for the next step (Figure 6.1).

Based on the UX design trends, Chinese users prefer an overall bright and colorful style with a light color background on web page design. The input box and activity buttons are listed on the right sidebar, together with other sign-in options (Figure 6.2). Therefore, all the essential information are concentrated on the sidebar so users can find what they need in an effective way.

The Swedish version of sign in/login page follows the test principles, that applies a dark ton on the background and the overall dark color style on the page. The login/sign in box and the content display on the box apply the same as they displayed on the Chinese version, with different button color on the consistency purpose. Users could easily find what they are looking for as all the important information is con-

## 6. Results

centrated in a small space. Instead of display all the content equally, email address and password input boxes are emphasized in the redesign page, meanwhile, sign in from the third-party services are represented with service icons, which is easy to be understood as well as keep the page looks clean and simple (Figure 6.3).

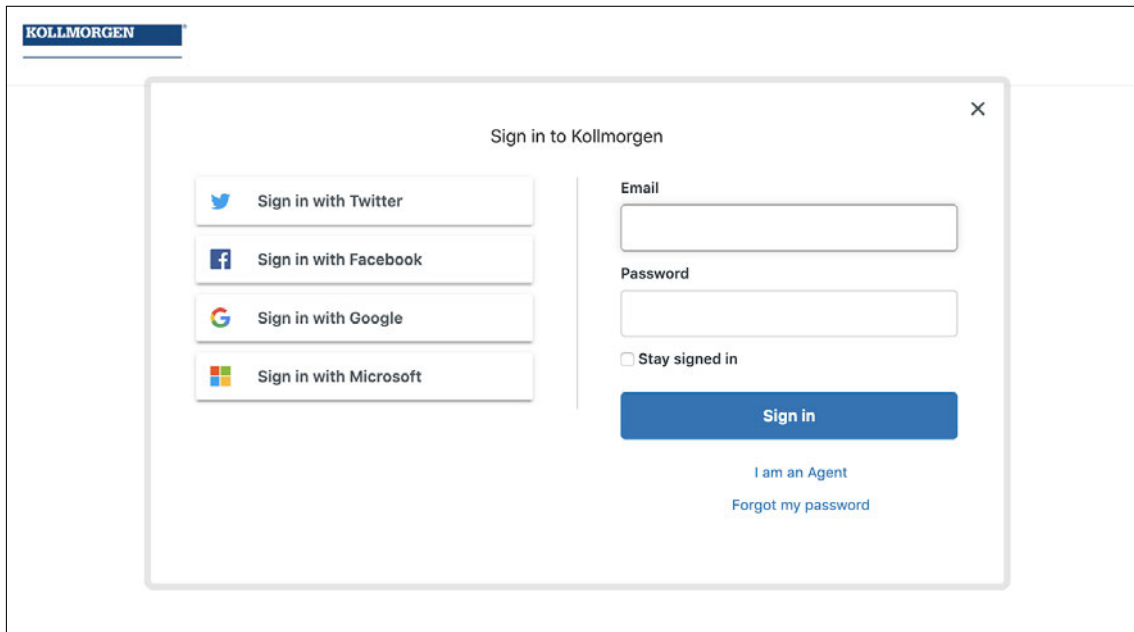


Figure 6.1: Old login page

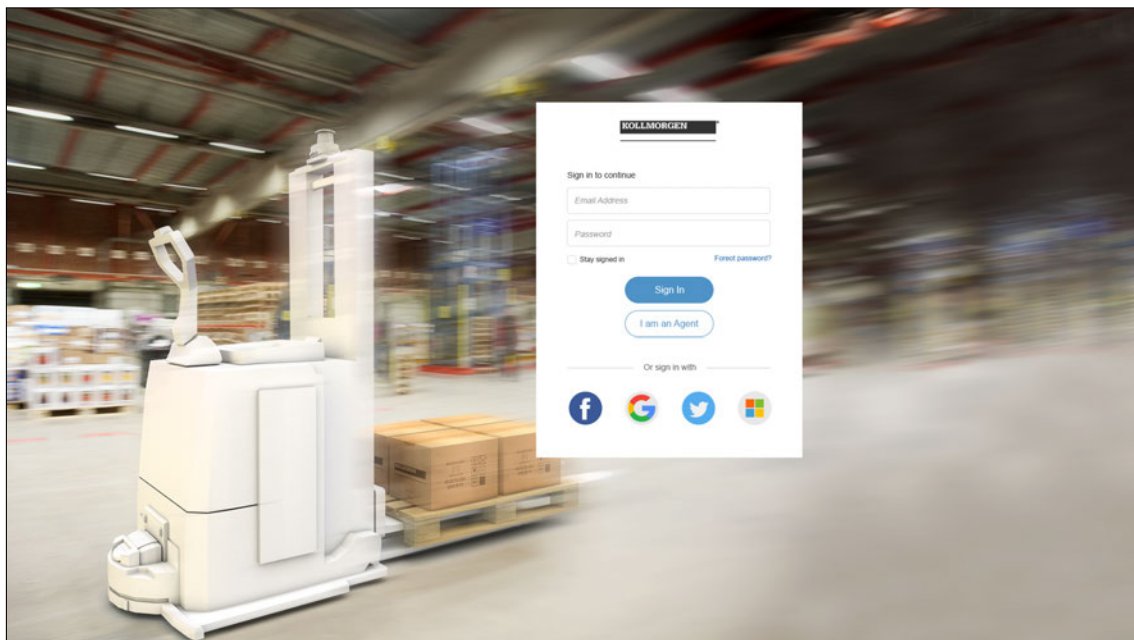
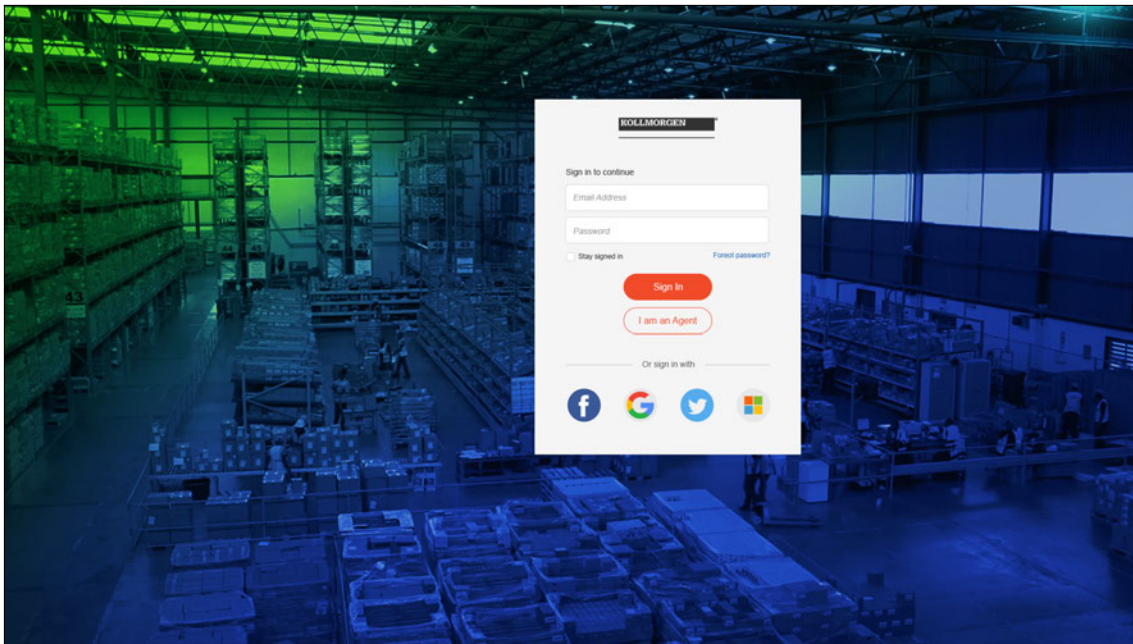


Figure 6.2: New login page for Chinese user





**Figure 6.3:** New login page for Swedish user

### 6.1.2 Home page

Generally, the old homepage has an unstructured navigation bar with unclear content (Figure 6.4). The layout of the page is not well thought through. Users may get lost or feel confused when they first visit this page, and they may spend a huge amount of time to be familiar with the information display on the page. The space on the home page was not fully used. A banner without any text display on the top of the page which took big space but did not represent any information. “Recent activities” column occupy most of the layout which was not the most important text users are interested in. In addition, the column “Promoted article” was in black background with orange text, which is not easy to read.

The homepage was redesigned based on the testing and interview results. In both versions, the most commonly clicked columns, knowledge base, smart warehouse, request, recent activity, news and download are displayed in the home page according to the feedback from participants.

The Chinese page follows the same design pattern as the sign in/login page, that apply an overall bright/light color style on the page. Hierarchical menu with only text is designed for the navigation bar, as according to the feedback from the testing, the meaning of the text on the menu bar is difficult to represent by icons, and it is not necessary to put icons there only for aesthetic purposes. Only applying text keeps the menu looks simple as well as easy to find information. For the layout, the Chinese homepage applies a three column layout design, all the content is concentrated in one screen that users can browse everything without scrolling the page by mouse.

## 6. Results

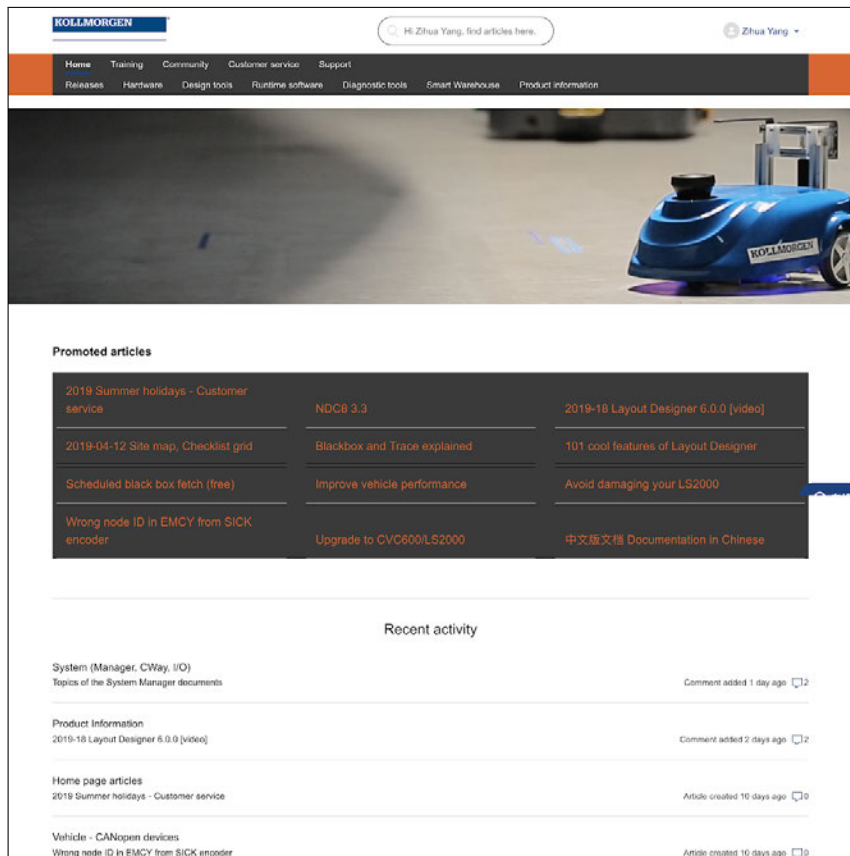


Figure 6.4: Old home page

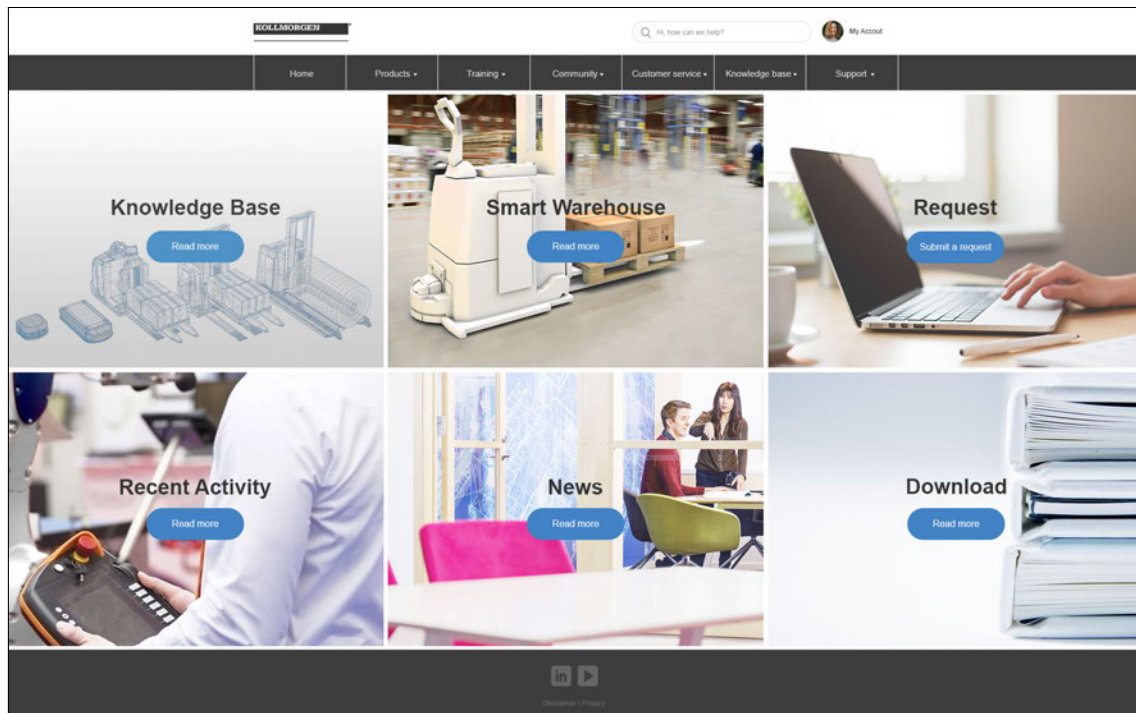
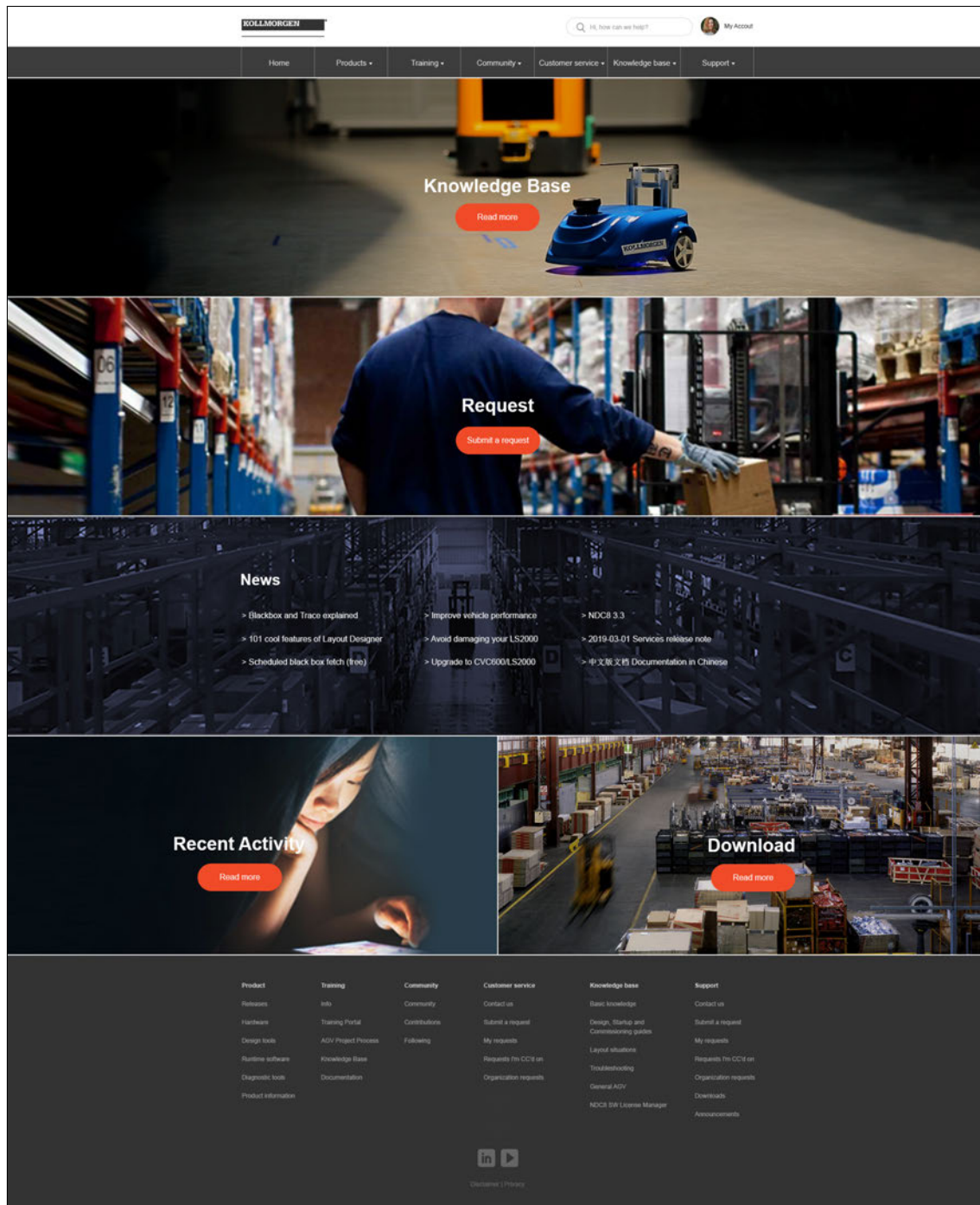


Figure 6.5: Home page for Chinese user



**Figure 6.6:** Home page for Swedish user V1

Meanwhile, as the testing result shows that half of the Swedish participants prefer density layout design, another half prefer simple layout design, the Swedish homepage has two versions for future tests. Figure 5.30 shows the one to two layout design version with an overall dark tone color style. Figure 6.7 presents the same column layout design Swedish version as the Chinese homepage, as a functional oriented design. Both designs apply buttons with conspicuous orange color, that are visible and easy to click on dark tone background.



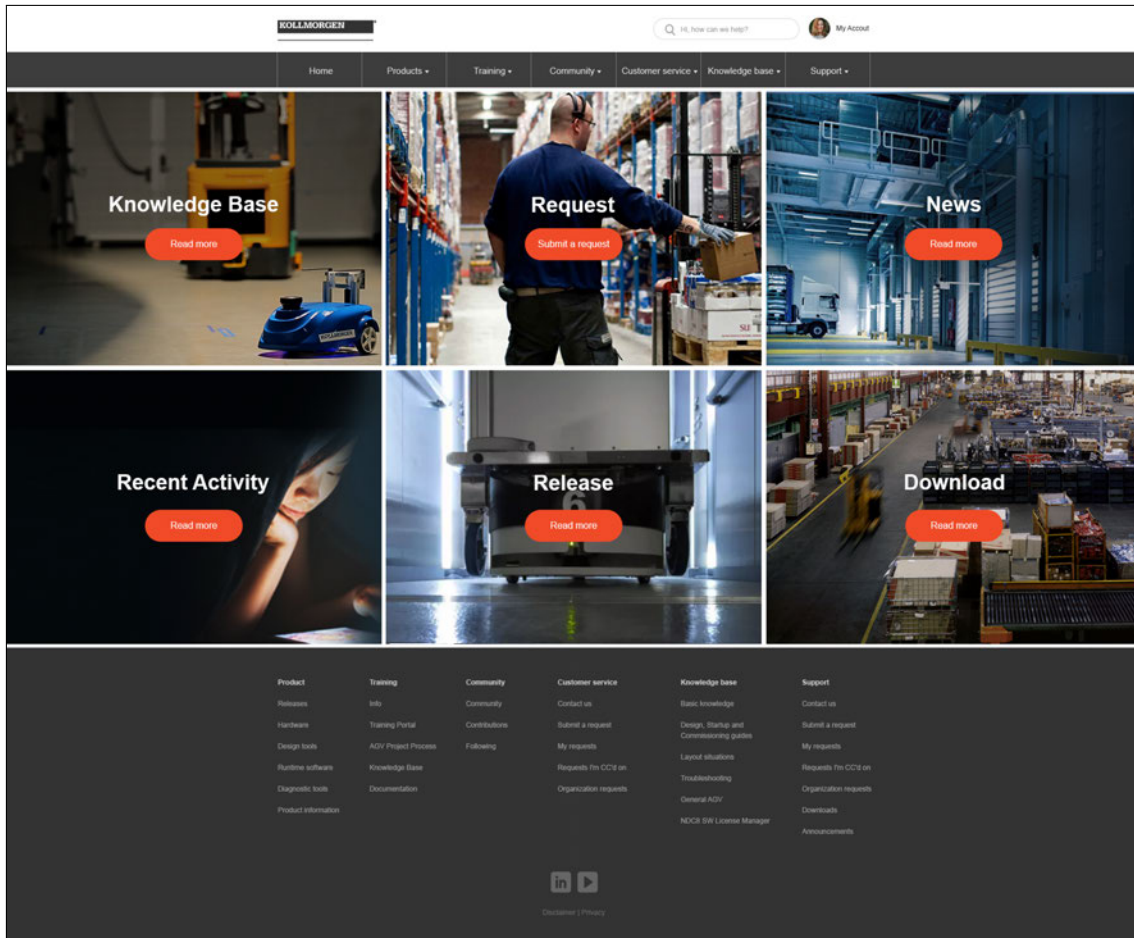


Figure 6.7: Home page for Swedish user V2

### 6.1.3 Knowledge base page

As shown in Figure 6.8, the old knowledge base page lists all the information in a two-column layout without UX design and aesthetics consideration. Users may feel bored to visit this page and spend a long time scrolling up and down for information they are looking for.

Figure 6.9 shows the redesign knowledge base page for the Chinese market, that provides a consistent color style and navigation menu as other Chinese web pages mentioned above. Following the design principles, a four column layout design was applied on the page for a density layout feeling. The page is short and concentrated to meet Chinese user’s preferences. Small icons are applied for each column, represented the function of this column, and also provide a lively atmosphere for the page. Each column contains a three lines list, with an arrow icon on the left side in each line. “Read more” buttons in white background with blue border are displayed in the columns which contains more than three lines.

**KOLLMORGEN** Hi Zhua Yang, find articles here. Zhua Yang

Home Training Community Customer service Support

Kollmorgen > Knowledge base Search

## Knowledge base

Here we collect best practice and good tips for creating the worlds greatest AGV systems.

**Basic knowledge**

- What is an AGV?
- Where do I find AGVs and Mobile Robots?
- What does an AGV system consist of?
- See all 9 articles

**Design, Startup and Commissioning guides**

- Create system cookbook
- Simulation
- Start-up vehicle cookbook

**Troubleshooting**

- Blackbox and Trace explained
- Low navigation level in Natural navigation
- Outside safety: Reasons and solutions
- See all 4 articles

**NDC8 SW License Manager**

- SMNG: HW and SW dongle verification
- Failed to refresh licenses
- NDC8 Online Licensing
- See all 18 articles

**System (Manager, CWay, I/O)**

- Scheduled black box fetch (free)
- Alternative I/O handling (using ACI)
- Can the normal monthly Windows patches (security and hotfixes) change the server fingerprint?
- See all 68 articles

**Vehicle**

- Avoid damaging your LS2000
- Improve vehicle performance
- 2D drawings for our components
- See all 79 articles

**Vehicle - Encoders**

- AC traction motor bearing with less than 1 pulse per mm
- Auxiliary encoder for distance without sync
- Drive and Encoder combinations and requirements
- See all 12 articles

**Vehicle - Navigation**

- CRA / CRAV antenna compatibility
- Different SDIO used for spot antennas in different releases
- Flat vs. round reflectors
- See all 35 articles

**Upgrade**

- Upgrade to CVC600/LS2000
- Could CVC600 work with LS2.0?
- Enable events e, L and x instead of E
- See all 11 articles

**Toyota only**

- Gateway documentation and more

**Layout situations**

- Automated Storage and Retrieval System (ASRS)
- Block storage
- Conveyor
- See all 16 articles

**General AGV**

- A good package of softwares any AGV App engineer should have
- BBC trailer of Aris UK
- CE certification requirements
- See all 31 articles

**Layout design**

- 101 cool features of Layout Designer
- Alternative point release distance, used on flexible segments
- Background drawing suggestions
- See all 27 articles

**Network communication**

- AGV: Are there any WLAN channel recommendations in an AGV system?
- Connect KepWare OPC server with Microsoft Excel
- Does Kollmorgen support CIP network protocol?
- See all 13 articles

**Vehicle - CANopen devices**

- Wrong node ID in EMCY from SICK encoder
- BMS - Battery Management Systems
- CAN bus communication trouble
- See all 23 articles

**Vehicle - Motors and Drives**

- AC Motor Parameters
- AC motor with external encoder connected to the SDIO
- AC steer motor does not reach sat angle
- See all 13 articles

**Vehicle - PLC programming**

- How to encrypt PLC?
- How to update the PLC in the NDC8 demo vehicle
- How to upload PLC from the vehicle controller?
- See all 17 articles

in Disclaimer | Privacy

Figure 6.8: Old knowledge base page

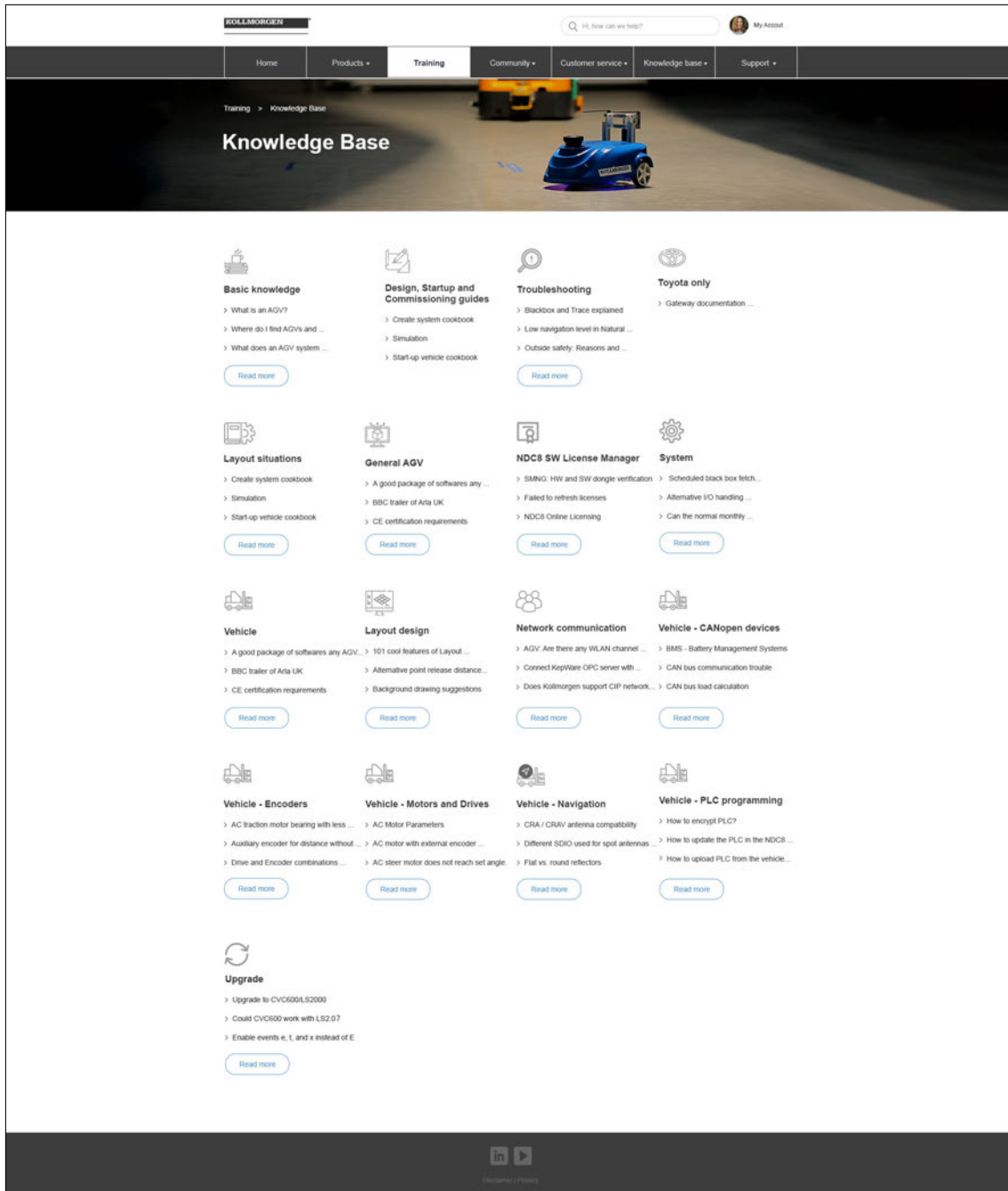


Figure 6.9: Knowledge base page for Chinese users

The Swedish redesign knowledge base page follows the Swedish design pattern, that applies a dark background color, white text color, with a minimalist layout design that only has two columns in each row but has a longer length page (Figure 6.10). Compared with the old design, this page is more organized, clear, and all the columns are concentrated in the middle of the page for an aesthetics consideration. Same as the Chinese page, small icons and arrows are applied to each column and line, so that users do not feel bored when they visit the page.

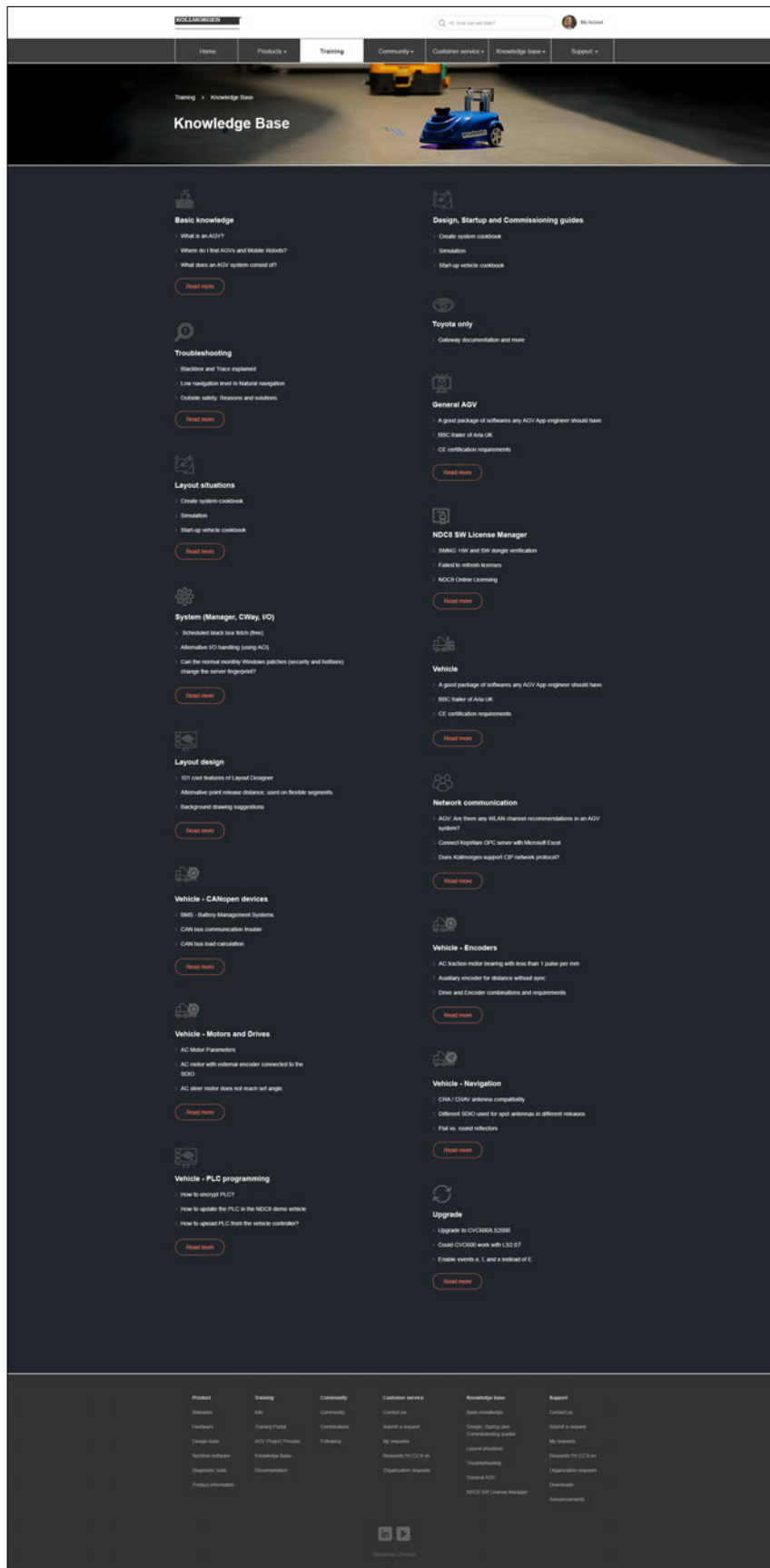


Figure 6.10: Knowledge base page for Swedish users

### 6.1.4 Knowledge based detail page

It can be seen from the Figure 6.11 that the old knowledge based detail page has a sidebar on the left, “follow”, “previous article” and “next article” buttons on the far right side of the page, which makes the page looks less structured and it may take users longer time to search on the page for their needs. Moreover, it is not a UX design with consideration to reduce the time cost when users visit the page, as they have to move the mouse from one side to another side for clicking.

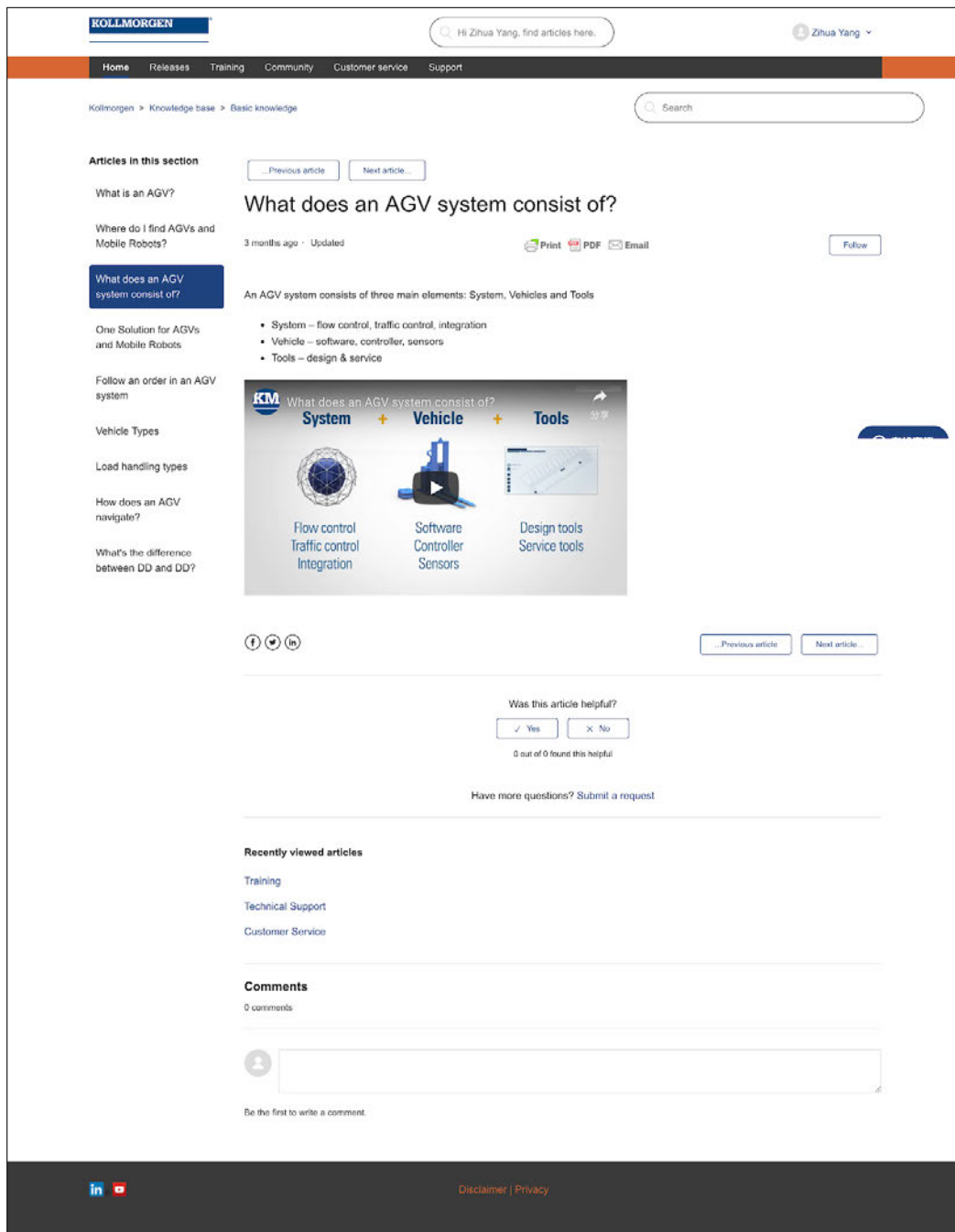


Figure 6.11: Old knowledge based detail page



The redesign pages, by contrast, are more compact so users can find information in an effective way. The Chinese page follow the design discipline as other Chinese pages, that has an overall bright looking. A sidebar with light grey background in a light grey outline is on the right side, which is obvious and well-structured. The background color of the sidebar would change to white when it is selected, also a small arrow will display on the left side in the selected line, so users know which page they are visiting. Small icons “Print”, “PDF” and “Email” which under the main article title was redesigned. Text followed the icons was removed as these the function of them are easy to be recognized. “Share” icon is added in the line, instead of list at the end of the article for a compact structure (Figure 6.12).

The Swedish version of knowledge based detail page follows the consistency design pattern that is in a dark background color with bright color text. Other UX attributes and the layout are the same as the Chinese page (Figure 6.13).

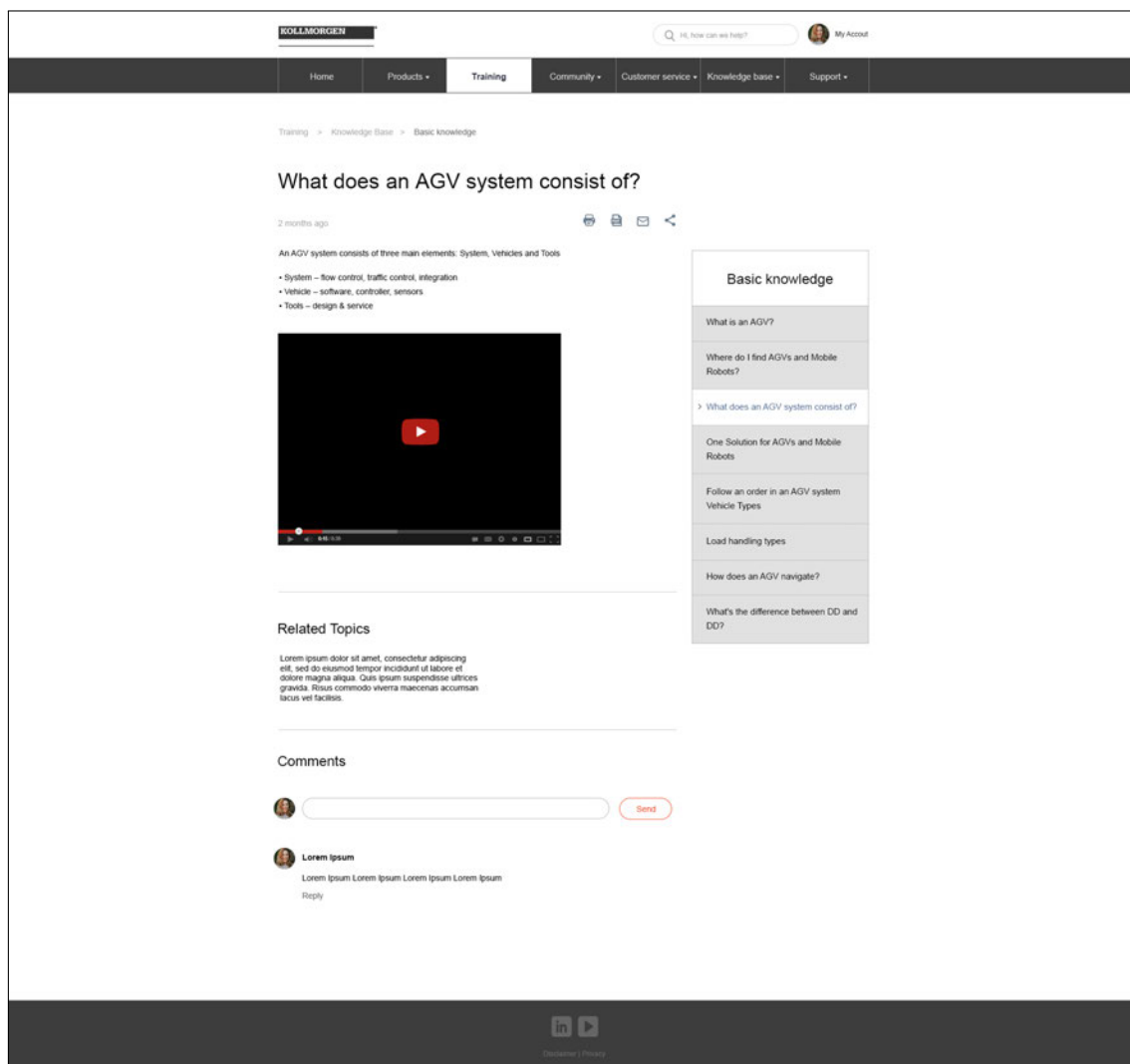


Figure 6.12: Knowledge based detail page for Chinese

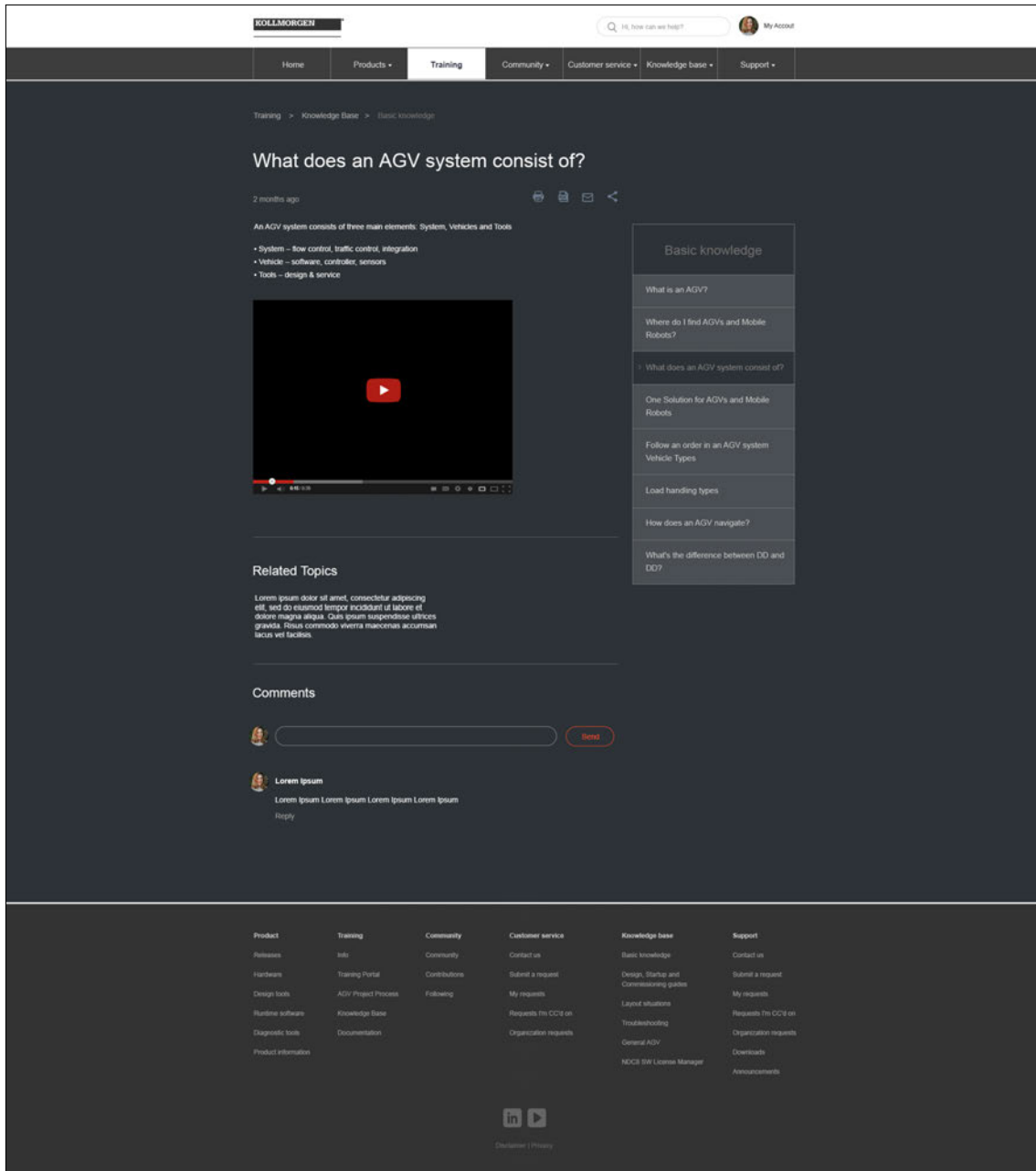


Figure 6.13: Knowledge based detail page for Swedish

### 6.1.5 Submit request page

As shown in Figure 6.14, the user-friendly attributes were not considered for the page design. The main information is aligned left on the old page, leaving a big blank space on the right side, which makes the page look imbalanced and unstructured. Navigation bar split into two lines in this page, the one underlying was considered as a sub menu. However, as this feature does not exist in other pages, users may get confused when they visit this page, as it is difficult for them to realize that the

sub menu is hiding in navigation bar. So in the main space, only the submit request section shown, but other options such as “my request”, “Request I’m CC’d on” and “Organization requests” does not display. It may take users a long time to find these sections when they visit this page if they are looking for the request results or other information.

The redesign pages for Chinese (Figure 6.15) follows the same design pattern as the other Chinese pages that is on a bright style. All the information on this page is concentrated in the middle of the page for a balanced and structured looking. Instead of listing all the options in the navigation bar, a right sidebar is presented, follow the same design discipline as the knowledge based detail page, which contains all the support options that users can select effectively. The attachments field is extended, compared with the old version, which allows users to drop a document into the box from their computer directly. A blue button is applied for submit the request, which is outstanding in a light background page. All the modification is on a user-friendly purpose.

The screenshot shows the 'Submit a request' page on the KOLLMORGEN website. The page has a dark navigation bar at the top with the KOLLMORGEN logo on the left, a search bar in the center containing 'Hi Zihua Yang, find articles here.', and a user profile 'Zihua Yang' on the right. Below the navigation bar, there is a secondary menu with options: Home, Training, Community, Customer service, Support, Contact us, Submit a request (highlighted), My requests, Requests I'm CC'd on, Organization requests, Downloads, and Announcements. The main content area is titled 'Submit a request' and contains the following form fields:

- A dropdown menu for 'Please choose your issue below' with 'General support question' selected.
- An 'Add emails' input field for the CC field.
- A 'Subject \*' text input field.
- A 'Situation \*' dropdown menu.
- A 'Description \*' text area.
- An 'Attachments' section with a file upload box containing the text 'Add file or drop files here'.
- A blue 'Submit' button at the bottom.

Below the description field, there is a small note: 'Please enter the details of your request. A member of our support staff will respond as soon as possible. Please add definitions, blackboxes, trace files, time of situation and vehicles involved, when applicable.'

At the bottom of the page, there are social media icons for LinkedIn and YouTube, and a footer with 'Disclaimer | Privacy'.

Figure 6.14: Old submit request page

ROLLMORGEN

Hi, how can we help? My Account

Home Products Training Community Customer service Knowledge base Support

Training > Support > Submit a request

## Submit a Request

\* Please choose your issue below

Return of Material Authorization (RMA)

\* Subject

\* Description

Please enter the details of your request. A member of our support staff will respond as soon as possible. Please add definitions, blackboxes, trace files, time of situation and vehicles involved, when applicable.

\* Serial Number(s)

Please note that there are products - VMCO, MCO, OPT1010, DCS, AGD and ACS - that we do not repair after the warranty period. Please purchase new units instead. Also note that only products in current price list is repaired.

Purchase Order number

The ID of this order in your system.

Attachments

Drop one file here or click to upload

Add a attachment

Submit

Support

- Submit a request
- My requests
- Requests I'm CC'd on
- Organization requests

**Figure 6.15:** Submit request page for Chinese users

The Swedish version redesign page follows the same design pattern as the other Swedish version pages, which has a dark background color and white text. The layout style and content is the same as Chinese version. An orange color button instead of a blue button is designed for submit the request, which is more conspicuous on a dark tone background (Figure 6.16).

## 6.2 Design guidelines

The UX design guideline are the summarized results based on the three test results performed above. It can be considered as suggestions or advice to design Chinese and Swedish websites. Further and iteration work are required as cultures are developing in both societies so people's preferences on websites are changing over time. Moreover, this guideline should be used combined with general UX design guidelines as it was mentioned above that aesthetics is important in UX design.

ROLLMORGEN

Hi, how can we help? My Account

Home Products Training Community Customer service Knowledge base Support

Training > Support > Submit a request

## Submit a Request

Please choose your issue below

Return of Material Authorization (RMA)

Subject

Description

Please enter the details of your request. A member of our support staff will respond as soon as possible. Please add additional screenshots, trace files, logs of execution and videos involved, when applicable.

Serial Number(s)

Please note that there are products – YMC06, MCD6, OPT 81756, DGD, ACC and ACS – that we do not repair after their warranty period. Please purchase new units instead. Also note that only products in correct price list is repaired.

Purchase Order number

The ID of this order in your system

Attachments

Drop and file here or click to upload

Add a attachment

Submit

Support

Submit a request

My requests

Requests I'm CC'd on

Organization requests

Product	Training	Community	Customer service	Knowledge base	Support
Releases	Info	Community	Contact us	Basic knowledge	Contact us
Hardware	Training Portal	Contributions	Submit a request	Design, Startup and Commissioning guides	Submit a request
Design tools	ADV Project Process	Following	My requests	Layout situations	My requests
Runtime software	Knowledge Base		Requests I'm CC'd on	Troubleshooting	Requests I'm CC'd on
Diagnostic tools	Documentation		Organization requests	General ADV	Organization requests
Product information				MOCA SW License Manager	Downloads
					Announcements

LinkedIn YouTube

Download | Privacy

Figure 6.16: Submit request page for Swedish users

## 6.2.1 Design guidelines for Chinese

In developing UX design for China, the following guidelines should be considered:

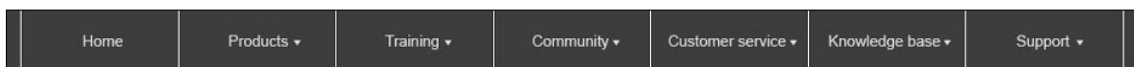
### 6.2.1.1 Orientation

The design should be functionally oriented, which means the priority of the UX design is user-friendly and can help users to achieve their goals in an effective way. On this premise, other guidelines described below can be broken to meet user's needs.

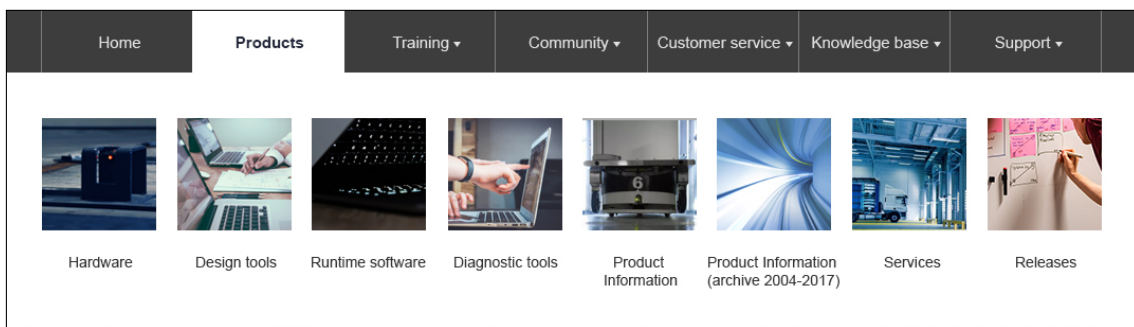
### 6.2.1.2 Main navigation menu

Websites contain hidden menus which require mouse-overs to explore the content. This may lead by the demand of an increasing amount of information displayed on the website. The design should be goal-oriented, with clear, structured but few texts in connection with the content to make sure they are easy to be understood and to be found effectively (Figure 6.17).

Submenu follows the same design pattern, applies simply text that is easy to be selected. Icons and images can be used to support the text, but should with the purpose to support or represent the text rather than redundant (Figure 6.18).



**Figure 6.17:** Main navigation menu



**Figure 6.18:** Submenu

### 6.2.1.3 Layout

Tabular and compact layouts are commonly applied in Chinese websites. Four to five columns layout design would meet Chinese user's needs, as they prefer to search for information among density content.

### 6.2.1.4 Color

The overall color style is tend to be light, bright and vivid. White and other light colors should cover the large area while mages and icons tend to apply bright and vivid color. The limitation of the this guideline will be presented on the discussion section below.

### 6.2.1.5 Links

For Chinese website, links should be opened in new windows or tabs automatically, which in line with user habits and user satisfaction.

#### **6.2.1.6 Text**

High-density information in a small space is accepted by Chinese user, which is consistent with the layout design guideline.

#### **6.2.1.7 Other**

Young Chinese users, age among 21-30 have the tendency to accept western UX design style.

### **6.2.2 Design guidelines for Swedish**

For Swedish website design, the following guidelines apply:

#### **6.2.2.1 Orientation**

Design is functionally oriented, the same as for UX design in China. On this premise, other guidelines described below can be broken to meet user's needs.

#### **6.2.2.2 Main navigation menu**

Main navigation menu follow the same guideline as to the Chinese UX design described above. The simple text should be used for both navigation bar and submenu design. Meaningful icons or images can be used as a bonus.

#### **6.2.2.3 Layout**

The minimalist layout design is commonly used for Swedish UX design. Layout less than four columns are accepted by Swedish users. However, the density layout design is also acceptable if users find it is high efficiency.

#### **6.2.2.4 Color**

Swedish users prefer dark tone color style for the whole website, with text and buttons with bright and vivid colors cover above.

#### **6.2.2.5 Links**

The default design of Link opening should in the same window as the majority of Swedish users rather decide to open a link in the same or new window by mouse or shortcut keys by themselves.

#### **6.2.2.6 Text**

Swedish users feel satisfied with low content density on the web pages.





# 7

## Discussion

The discussion chapter is divided into a discussion of the findings and a discussion of the results of this study. In the discussion of the findings, interpretations of findings and alternative approaches will be discussed. The result discussion will bring up the limitation of this study.

### 7.1 Result discussion

Prior studies that have noted the importance of divided UX design into two categories for HC and LC cultures, as they emphasized that cross-culture UX design is strongly related with cultural dimensions based on Hofstede's six cultural dimensions theory and Hall's HC and LC culture theory. In contrast to earlier findings, however, no evidence of such a strong tendency was detected in this thesis.

For instance, Würtz [20] believes that website design in HC culture background applies a large number of animations, images that imply collectivist societies, hierarchical menu, many sidebars and open links in new windows. However, this cannot be detected in Mcdonald's Asian websites now, where are considered as HL culture regions, and also cannot be found in subsequent usability testing and interview. Websites in both cultures are goal-oriented. Hierarchical menus are commonly used in both cultures, and images promote individualistic lifestyle can be found in both cultures.

This result may be explained by the fact that firstly, technology is developing fast over the past 30 years, and the web design trend is changing over time. For instance, animations are not popular in website development all over the world, which may be caused by the fall of Adobe Flash and the rise of HTML5, rather than the cultural factors.

Secondly, it seems possible that these results are due to the impact of globalization. Internet makes the bridges of communication and cultural exchange between different societies, as people are receiving the same information all over the world by internet, they tend to accept different cultures, and generate a similar preference on UX website design.

Age is an essential factor that cannot be ignored. It can be seen from the tests and interview results that Chinese young users, age below 35 years old, are more

inclined to accept western UX design style, compared with older users. Meanwhile, Swedish elder users, age above 40 years old, hold the opposite view with younger Swedish users. All of these phenomena indicate that as culture is not static but changing by time, younger users are easier to accept new technologies and future movement than elder users. For these users, traditional cultures have little influence on them. By contrast, older users tend to be more stubborn and less receptive to new cultures and technologies, which lead to a more culture-oriented UX preference.

Finally, the types of websites determine the UX design strategy. Pilot research of cross-culture UX design is more focused on analyzing government and university websites [28], which reflect the hierarchy in the societies and the strong influence of traditional cultures. This study mainly focuses on analysis business, consumption and product websites, which are less influenced by local cultures but more emphasis on individualistic, personality and lifestyles. According to Hoffman's culture mode [30], these features belong to humanities that all human beings yearn for them. This may be a possible explanation why cultures play a less important role in UX website design in this study.

## 7.2 Limitations

### 7.2.1 Theory

Although Hofstede's theory is generally accepted, it has been extensively criticized. The culture model was first launched in the 1980s, later modified and extended in 2000. The data it applied might be already out-of-date. As we mentioned below, culture is changing with time, whether this result meets nowadays' rapid growth of the internet industry is questionable. Individualism parameters can increase with economic growth [11], and China has been sustaining the world's highest rates of economic growth for the last 30 years [12]. Does the high speed of economic growth change Chinese user's preferences and behaviors over time?

Furthermore, Hofstede's theory assumes only one culture for each country, which has its major limitation. People immigrate from one region to another around Scandinavian and other countries all over the world. People from multicultural backgrounds use to speak native languages at home and be influenced by their home country's cultures. Hofstede's theory applied to Swedish culture dimension is questioned by this thesis. Several user tests were adopted later to see if the theoretical model match reality.

Hall's culture model has the same shortage as Hofstede's theory, that it was applied 30 years ago. Have cultures been changed during this period or people keep the same usability and behaviors is the question we explored in this thesis.

Unlike six cultural dimensions and low-context and high-context culture model, which only describe the culture of one society on a national level, and assume people who live in the same society have exactly the same culture concept. Both

Holliday and Hoffman highlight the mobility and complexity of cultures and the way of intercultural communication individuals would apply. Factors from small to big, inside-out and outside-in impact people's culture concept, and the complexity of culture implies it is difficult to define only one culture for a given society.

## **7.2.2 Types of Websites**

These findings may be somewhat limited by the specific types of websites. As mentioned above, this study is about UX design preferences for business, consumption and product websites in different cultures. As websites for consumption tend to invoke user's desire for a better lifestyle on a promotion purpose, the UX style can be similar all over the world. However, for other types of website, for instance, government, authorities, universities, etc., the results might be different. It is possible to hypothesize that power distance, collectivism and individualism, HC and LC cultures may play important roles in UX preferences for these kinds of websites.

## **7.2.3 Target user groups**

A note of caution is due here since the Chinese participants in this study are well educated middle class who live in big cities in China, which cannot represent the Chinese market. China is a huge market with an expanding gap between rich and poor. China's Gini Coefficient is 0.465, ranking top most unequal countries [38]. Moreover, household income in Chinese urban areas is 2.72 times that of rural areas [39], which means well educated Chinese users who live in big cities are more likely to receive, accept and can afford western cultures, agree that personalities and individualism are crucial, while users who stay in rural areas may have fewer opportunities to get in touch with new things, or the environment around them holds the opinion against accepting new things. They may have different preferences on UX website design and that segment of users require future research.

## **7.2.4 UX attributes**

Only a few UX attributes were tested in the usability testing and interview. Multimedia, promotion of values, animations were not included in the study because of the lack of resources on the redesigned website. As the study can only apply image specified relative to the content, it was difficult to test these attributes with this website.

## **7.2.5 Sample size**

There were only 16 participants attend the usability testing. With a small sample size, caution must be applied, as the findings might not represent the real situation.

### 7.3 Future work

To develop a full picture of the UX preferences in different cultures, additional studies will be needed. First, other types of website can be tested to contribute to the results. Users may represent different UX preferences for different types of websites. It is not surprising that people consider personal consumption website should be leisure-centered and highlight personality, while government or authority websites should be formal and represent the nation.

Secondly, the Chinese user group should be extended. Individuals who live in less developed areas, and with low levels of education may hold a different UX preferences on website design.

More UX attributes, including multimedia, and promotion of values, animations should be tested for the whole picture. Moreover, the size of the test sample should be increased for a more accurate result.

For Swedish users, A/B test for the redesigned layout is necessary for better understanding of their preferences for layout design.

# 8

## Conclusion

This study was undertaken to redesign a website with the UX attributes to meet the needs of Chinese and Swedish users, and evaluate how different cultural factors influence user's preferences for UX attributes between Chinese and Swedish websites.

One of the more significant findings to emerge from this study is that culture is not stagnant but keeping change in society, also the same as the user's UX preferences on website design. With the development of web technologies, individuals all over the world live in an era of multiple cultures, are impacted and constantly change their UX preferences. Therefore, Hofstede's and Hall's theories do not apply to the UX website trend at this stage. New theories should be included for better understanding of user's UX preference nowadays.

Hoffman (2018) suggests that human nature and personalities should be taken into account when considering the influence of culture, as they can also be big factors on UX website design. This study has identified it. Users in both culture background are function-oriented when they were required to operate tasks in short time. And for some questions, users' personalities overcome the impact of cultures in both user groups.

The results of this study indicate that young middle-class Chinese users tend toward Swedish users' UX preferences, as they have a big opportunity to receive and accept foreign cultures from the internet. However, limitations need to be considered as China has a big population and a widely distributed social structural levels. Different UX strategies may need to apply to different target user groups.



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# A

## Appendix

Cross-cultural user experience research questionnaire

**How old are you?**  
你的年齡?

- Under 20
- 21-25
- 26-30
- 31-35
- 36-40
- 41-50
- 50+

**What is your nationality?**  
你的國籍?

## A. Appendix

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Ikea is redesigning their website, and here are two menu styles for the new website, which one below do you like more?

假设宜家要重新设计他们的官网，下面哪一个菜单风格你比较喜欢？



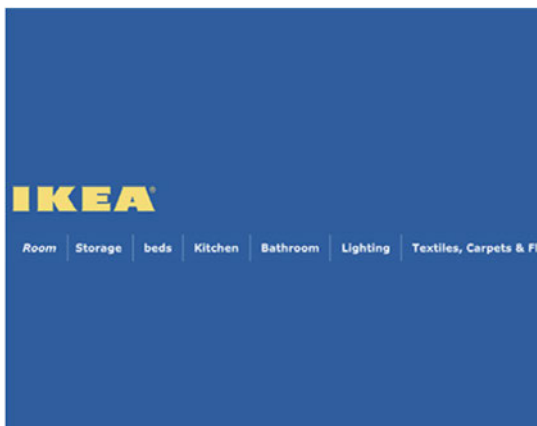
Text with icons 图标+文字说明



Text without icons 只有文字

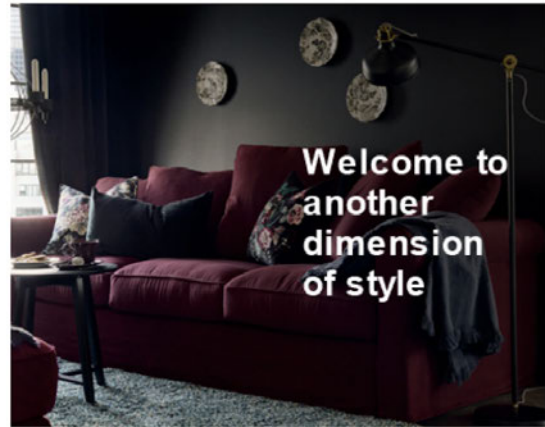
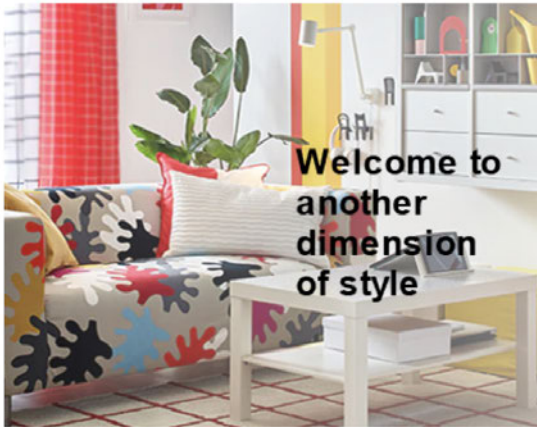
Which navigation bar below do you like more?

下面哪一个菜单栏风格你比较喜欢？



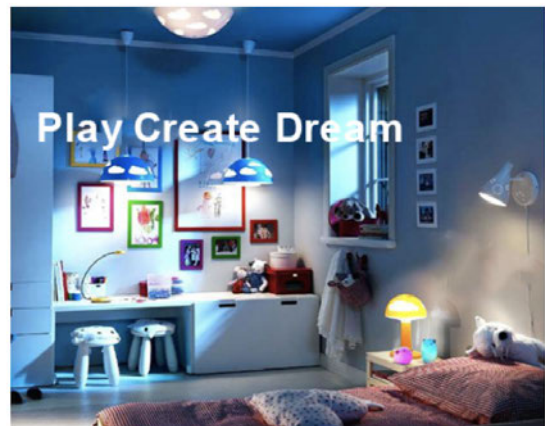
Which banner below do you like more?

下面哪一个横幅广告你比较喜欢?



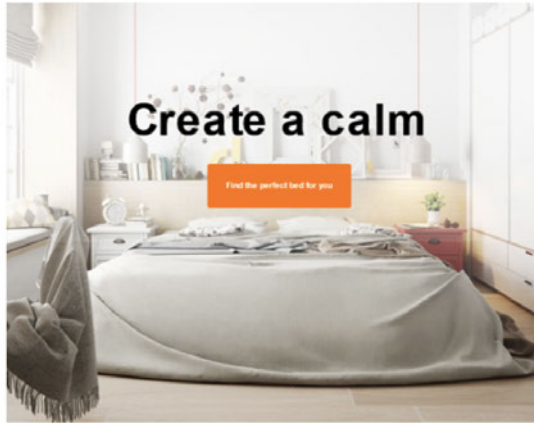
Which banner below do you like more?

下面哪一个横幅广告你比较喜欢?



Which banner below do you like more?

下面哪一个横幅你比较喜欢?



Which layout below do you like more?

下面哪一个版面风格你比较喜欢?



### How do you like videos show on the website?

#### 你怎么看待网站上的视频?

- Only if a video with "Play" and "Pause" buttons so I can stop it whenever I want.  
视频带有播放暂停键让我可以随时播放或者停止。
- It doesn't matter whether the video is without "Play" and "Pause" buttons.  
无所谓有没有播放暂停键。
- I don't want to see any video on a website.  
不希望看到网页上有视频。
- Others  
其他

### How do you open a link?

#### 你习惯怎么打开链接?

- Open in that same window or tab  
在同一个窗口打开
- Open in a new window or tab  
在新窗口打开
- Whatever  
无所谓





# B

## Appendix

### Survey data

Age	Nationalities	Menu style (with icons / without icons)	Flat/hierarchical menu	color (dark/bright)	Individual with product or not	Simple or density design	2-3 columns / 4+ columns	Video with button / without button	link open in same window or new window
36-40	Chinese	Text with icons	Flat menu	Bright	Without	Simple	4+	with	Same window
21-25	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	New window
21-25	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	4+	with	New window
21-25	Swedish	Text without icons	Hierarchical menu	Dark	Without	Simple	2-3	with	New window
26-30	Swedish	Text with icons	Flat menu	Dark	Without	Density	2-3	No video	New window
26-30	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	2-3	No video	New window
26-30	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	New window
36-40	Chinese	Text with icons	Hierarchical menu	Dark	Without	Density	2-3	with	Same window
26-30	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	Whatever	New window
50+	Swedish	Text with icons	Hierarchical menu	Bright	With	Simple	4+	with	New window
21-25	Swedish	Text without icons	Flat menu	Dark	Without	Simple	4+	with	New window
21-25	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	New window
21-25	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	Same window
41-50	Swedish	Text with icons	Hierarchical menu	Dark	With	Simple	2-3	Whatever	New window
21-25	Swedish	Text without icons	Flat menu	Dark	With	Simple	2-3	with	New window
21-25	Swedish	Text with icons	Hierarchical menu	Bright	Without	Simple	4+	with	Same window
21-25	Swedish	Text with icons	Hierarchical menu	Dark	Without	Density	2-3	with	New window
31-35	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	New window
21-25	Swedish	Text without icons	Hierarchical menu	Dark	Without	Density	2-3	Whatever	New window
41-50	Chinese	Text without icons	Hierarchical menu	Bright	With	Simple	4+	with	New window
26-30	Swedish	Text without icons	Hierarchical menu	Dark	Without	Simple	4+	with	Same window
36-40	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	Same window
21-25	Swedish	Text with icons	Hierarchical menu	Bright	Without	Density	2-3	with	New window
31-35	Chinese	Text with icons	Flat menu	Dark	Without	Density	2-3	with	New window
21-25	Chinese	Text with icons	Flat menu	Bright	Without	Simple	2-3	No video	New window
26-30	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	2-3	with	New window
26-30	Chinese	Text with icons	Hierarchical menu	Bright	With	Simple	2-3	with	New window
21-25	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	Whatever	New window
31-35	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	Same window
31-35	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	2-3	with	New window
21-25	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	New window
26-30	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	Whatever
36-40	Chinese	Text with icons	Flat menu	Dark	With	Simple	2-3	with	Same window
31-35	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	4+	with	New window
21-25	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	Same window

## B. Appendix

Age	Nationalities	Menu style (with icons / without icons)	Flat/hierarchical menu	color (dark/bright)	Individual with product or not	Simple or density design	2-3 columns / 4+ columns	Video with button / without button	link open in same window or new window
31-35	Swedish	Text without icons	Hierarchical menu	Dark	Without	Simple	4+	with	New window
36-40	Chinese	Text with icons	Flat menu	Dark	Without	Simple	4+	with	Whatever
21-25	Swedish	Text with icons	Flat menu	Dark	Without	Simple	2-3	Whatever	New window
26-30	Chinese	Text without icons	Flat menu	Dark	Without	Density	2-3	with	New window
26-30	Swedish	Text without icons	Flat menu	Bright	Without	Simple	4+	Whatever	Same window
21-25	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	2-3	No video	New window
21-25	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	New window
31-35	Chinese	Text with icons	Flat menu	Bright	Without	Density	4+	with	Same window
21-25	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	2-3	No video	New window
36-40	Swedish	Text without icons	Flat menu	Bright	Without	Simple	4+	Whatever	New window
36-40	Swedish	Text without icons	Flat menu	Dark	Without	Simple	2-3	with	New window
21-25	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	New window
21-25	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	New window
21-25	Swedish	Text with icons	Flat menu	Dark	Without	Simple	4+	with	New window
41-50	Swedish	Text with icons	Hierarchical menu	Dark	With	Simple	4+	with	New window
26-30	Chinese	Text without icons	Flat menu	Dark	Without	Simple	4+	with	New window
21-25	Swedish	Text without icons	Hierarchical menu	Bright	With	Simple	2-3	with	New window
31-35	Chinese	Text with icons	Hierarchical menu	Dark	With	Simple	2-3	with	New window
31-35	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	4+	with	New window
26-30	Chinese	Text with icons	Hierarchical menu	Bright	With	Simple	2-3	with	Same window
26-30	Chinese	Text with icons	Flat menu	Dark	Without	Simple	2-3	with	New window
31-35	Chinese	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	New window
50+	Swedish	Text without icons	Flat menu	Bright	Without	Density	4+	No video	Whatever
21-25	Chinese	Text without icons	Flat menu	Dark	With	Simple	4+	with	Same window
41-50	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	Whatever
26-30	Swedish	Text without icons	Hierarchical menu	Dark	Without	Simple	2-3	No video	New window
21-25	Swedish	Text with icons	Flat menu	Dark	Without	Simple	4+	with	New window
26-30	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	2-3	No video	Whatever
21-25	Swedish	Text without icons	Flat menu	Dark	With	Simple	4+	with	New window
36-40	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	New window
41-50	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	New window
31-35	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	4+	No video	Same window
26-30	Swedish	Text with icons	Hierarchical menu	Bright	Without	Simple	4+	with	New window
41-50	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	2-3	with	New window
26-30	Swedish	Text with icons	Hierarchical menu	Dark	Without	Simple	4+	with	New window
26-30	Swedish	Text with icons	Flat menu	Dark	Without	Simple	2-3	with	New window
31-35	Chinese	Text with icons	Hierarchical menu	Bright	Without	Simple	2-3	No video	New window



# C

## Appendix

\* 1. How old are you?

- Under 20
- 21-25
- 26-30
- 31-35
- 36-40
- 41-45
- 46-50
- 50+

\* 2. What is your nationality?

- China
- Sweden
- EU country except Sweden

Other (please specify)

\* 3. What's your education background?

- Undergraduated
- Postgraduated
- Ph. D.

Other (please specify)

\* 4. Which mockup do you like more?

- Erebus
- Hemera

\* 5. Overall I think the web pages look good

Strongly disagree	Disagree	I don't know	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 6. It was difficult to finish the given tasks.

Strongly disagree	Disagree	I don't know	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 7. The website appears easy to navigate

Strongly disagree	Disagree	I don't know	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 8. The information displayed on the website is valuable.

Strongly disagree	Disagree	I don't know	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 9. I was confused while performing the tasks.

Strongly disagree	Disagree	I don't know	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Are there any improvements that you feel we could make to the website?



# D

## Appendix

Nation	Age	Education	color	icons	Links	Layout	Overall I think the web pages look good	It was difficult to finish the given tasks.	The website appears easy to navigate	The informati on displayed on the website is valuable.	I was confused while performing the tasks.
China	31-35	Undergraduate	Bright, the dark version is too dark.	i don't care if there're icons or not	Open links in new windows	prefer 4 columns	strongly Agree	Disagree	Strongly agree	Agree	Disagree
China	25-30	Postgraduated	Bright	icons make the navigation not that boring	Open links in new windows, and the web was supposed to open links in new windows for me.	prefer 4 columns	Agree	Strongly disagree	Agree	Agree	Strongly disagree
China	36-40	Undergraduate	bright, looks comfortable and warm.	icons are good	always open links in new windows	prefer 4 columns.	Strongly agree	Strongly disagree	Strongly agree	Strongly agree	Strongly disagree
China	31-35	Postgraduated	Dark, high technology feeling	it doesn't matter	open links in new windows automatically	2-3 columns is better. easy to focus on the important content. 4 columns take too much time to search for information	Agree	Disagree	Agree	Agree	I don't know
China	25-30	Undergraduate	Dark, chic and	it's easy to find catagories with icons, icons are good	open links in new windows automatically	2-3 columns is better. clean catagories, big pictures contains more information	Agree	Disagree	Strongly agree	Strongly agree	Strongly disagree
China	36-40	Undergraduate	light, feeling comfortable. the dark one makes me feel pressure	don't like icons, keep simple is good	open links in new windows by ctrl left click	prefer 4 columns, so everything in one page. it's easy to find things when they gether together	Agree	Disagree	Strongly agree	I don't know	Strongly disagree
China	36-40	Undergraduate	light, the color is comfortable. the dark one is too dusky makes me feel sad.	it doesn't matter because the icons don't make any sense to me.	Open links in same windows.	prefer 4 columns, so everything in one page. the 2-3 columns are too empty and waster space	Agree	Disagree	Agree	I don't know	Strongly disagree
China	31-35	Undergraduate	bright, make me feel glad	without icons because i don't understand the icons. it's faster to read the text	Open links in new windows	2-3 columns is better. big pics contain more information, and it's not hard to scroll down the page with mouse	Agree	I don't know	Agree	Agree	Disagree



Nation	Age	Education	color	icons	Links	Layout	Overall I think the web pages look good	It was difficult to finish the given tasks.	The website appears easy to navigate	The information displayed on the website is valuable.	I was confused while performing the tasks.
China	31-35	Undergraduate	bright is better. the dark one is too serious.	without icons, as it's a simplistic design	Open links in new windows	4 columns better, easy to find everything in one screen.	Strongly agree	Strongly disagree	Agree	Agree	Disagree
India	25-30	Postgraduated	Dark, comfortable, modern	icons look better	Open links in same windows, use ctrl + left click to open in new windows if necessary	prefer 4 columns, so everything in one page	Agree	Disagree	Agree	Strongly agree	Disagree
Sweden	46-50	Postgraduated	Dark, easy to read text	don't like icons, keep simple is good	Open links in same windows, right click to open in new windows if necessary	prefer 4 columns, more information, no scroll down	strongly Agree	Strongly disagree	Agree	I don't know	Strongly disagree
Sweden	41-45	Undergraduate	Dark, just prefer dark.	icons are good	Open links in same windows, right click to open in new windows if necessary, it depends on the logic whether open it in same windows or new ones.	2-3 columns is better, we can know which one is more important than others	Agree	Disagree	Agree	agree	Disagree
Sweden	41-45	Undergraduate	Dark, just prefer dark.	i don't care if there're icons or not	Open links in same windows, use ctrl + left click to open in new windows if necessary	prefer 2-3 columns, make the page simple and emphasize the important part	Agree	Strongly disagree	Agree	agree	Disagree
Sweden	25-30	Postgraduated	light, feeling comfortable	without icons because the icons don't related to the text	Open links in same windows, use middle mouse click to open in new	prefer 4 columns, so everything in one page	Agree	Disagree	Agree	I don't know	Strongly disagree

Nation	Age	Education	color	icons	Links	Layout	Overall I think the web pages look good	It was difficult to finish the given tasks.	The website appears easy to navigate	The information displayed on the website is valuable.	I was confused while performing the tasks.
Sweden	31-35	Postgraduated	dark.	it's easy to find catagories with icons. icons are good	Open links in same windows. use ctrl + left click to open in new windows if necessary	2-3 columns is better. less desicition make. 4 columns is to density, makes me don't know which one is important	Agree	Disagree	Agree	Agree	Disagree
Sweden	50+	Undergraduate	bright. make me feel glad	it doesn't matter because the icons don't make any sense to me.	Open links in same windows.	prefer 4 columns. so everything in one page.	Agree	Strongly disagree	Agree	Agree	Disagree
Sweden	36-40	Postgraduated	Dark.	without icons because the icons don't related to the text. but if the icons have meaning it would be better to have icons	Open links in new windows by right click	2-3 columns is better. show few information in each screen that I can know what to read. 4 columns contains too much information in one page, that i donat know where to start.	Agree	I don't know	Strongly agree	Agree	Strongly disagree
Sweden	31-35	Undergraduate	dark one looks serious, professional and reliable as a company's website with long history	with icons. visible.	same window. or right click for new window. to help me don't get lost	4 columns better. give a overview of all information. the 2-3 columns is hard to find information	Agree	Strongly disagree	Strongly agree	I don't know	Strongly disagree