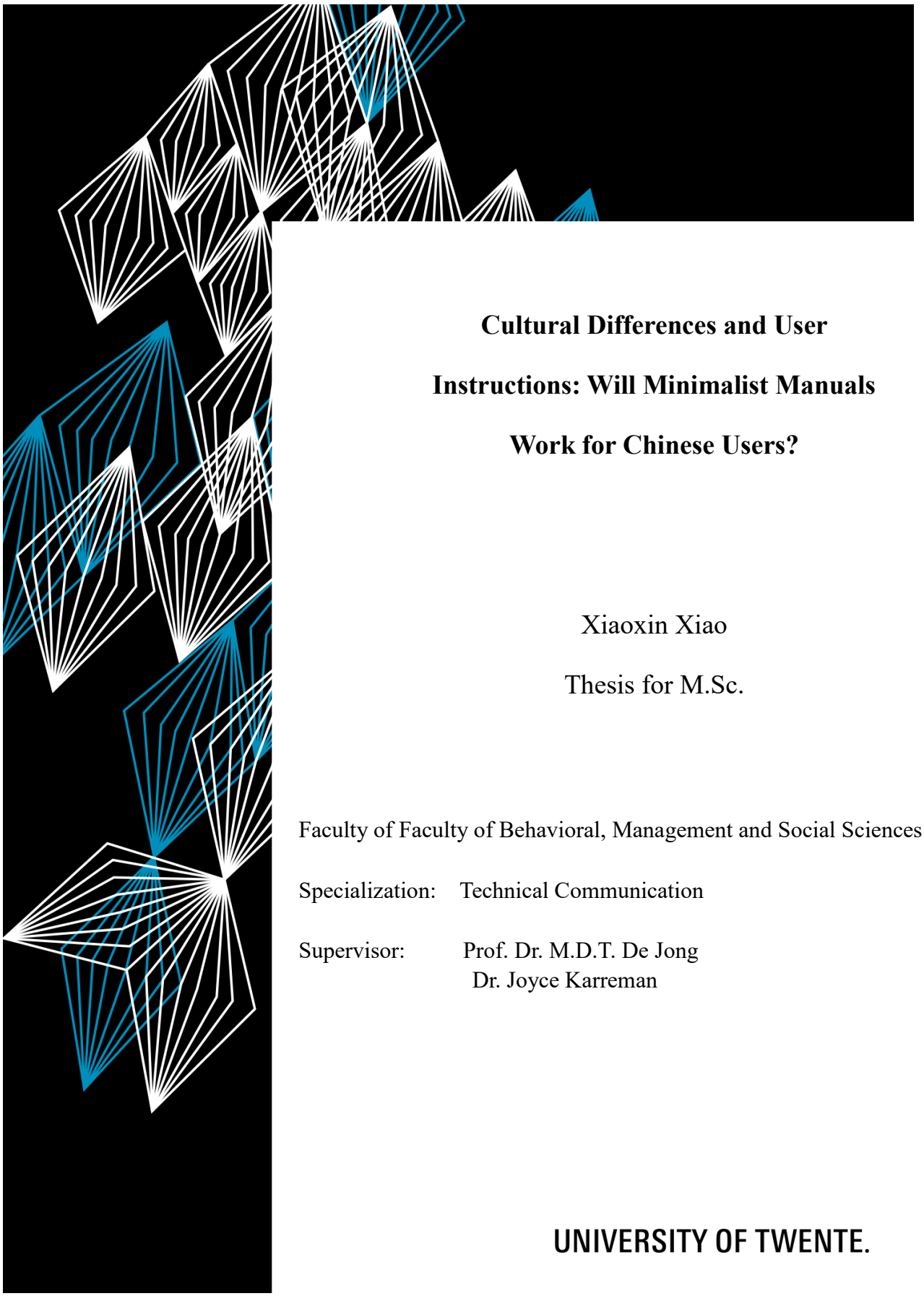

Cultural Differences and User Instructions: Will Minimalist Manuals Work for Chinese Users?

Xiaoxin Xiao

Thesis for M.Sc.

Faculty of Faculty of Behavioral, Management and Social Sciences

Specialization: Technical Communication

Supervisor: Prof. Dr. M.D.T. De Jong
Dr. Joyce Karreman

UNIVERSITY OF TWENTE.

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Abstract:

Purpose: Studies show that Western and Chinese communicators design user manuals in different ways, but it is not known if Western and Chinese users benefit more from documents that are designed in their own cultures. This paper attempts to systematically explore the effects of manuals that are created on the basis of Minimalist principles on Chinese users and Western users. It investigates whether Chinese users benefit from a Minimalist manual as much as Western users do.

Method: A quantitative and qualitative study is conducted with SwipeGuide Minimalist manual for Satinelle Prestige BRE-650, a Philips epilation device for different body parts, such legs, arms, underarms, and so on. The cultural background (Western versus Chinese) is the independent variable. Users' motivation and usability of the manuals are the dependent variables. The quantitative method is adopted to evaluate users' motivation and usability. The qualitative method is applied to analyze users' perception of the Minimalist manuals in terms of documentation elements: structure, writing style, visual design and error information. 48 participants (24 Chinese and 24 Westerners) were recruited to perform eight tasks using the manuals and then were required to fill out two questionnaires measuring motivation and usability. Finally, an average 25-minute in-depth interview was conducted to examine their attitude towards the manual.

Results: Quantitative results show that the Minimalist manual works better for Western users than Chinese users in terms of usability and attention. Nevertheless, qualitative results reveal that except for structure logic (whether the way of presenting information is chronological or non-chronological), no cultural differences are found between Chinese and Western groups in terms of structure, writing style, visual design and error information of the Minimalist manual.

Conclusion: This study indicates that the influence of cultures in technical documentation may have been overrated and the user manual designed in accordance with Minimalist principles, to some extent, also works for Chinese users. For future researches, more technical documentation elements and more specific Minimalist principles can be explored and compared.

Keywords: intercultural communication, Minimalism, Chinese culture, user instructions

Content

1. Introduction

With 1.3 billion population, China plays a vital role in the international marketplace, which boosts the need for technical communication targeting Chinese users. Technical communication differs among cultures. In general, source documentation is written by the source language in the context of source cultures. On the one hand, it is believed that users benefit most when they use technical documentation designed by their own languages and cultural preferences. Because different cultural practices affect the way individuals present or perceive written information (Ulijn & St. Amant 2000).

On the other hand, it is argued that internationalization leads to cultural homogenization, which makes it possible for users to evaluate technical documentation in line with another culture positively. This assumption is confirmed in previous studies. For example, an empirical research conducted by Li, De Jong, and Karreman (2015) examined the effects of culturally adapted user instructions on users and investigated the differences in document structure of Chinese and Western manuals. The results demonstrated that no significant differences were found in Chinese and Western participants' task performance and appreciation of the manuals. The researchers concluded that expectations, preferences and thought patterns created across culture might be similar, and the user scenarios from varied cultures may be similar, too. Therefore, "cultural differences found in content analytic research may reflect the habits of technical communicators rather than the preferences of users" (Li et al., 2015).

This study cooperates with SwipeGuide, a startup in the Netherlands who shows interest in documentation creation for Chinese users. It mainly investigates the impact of Sino-Western cultural differences on the perception of a Minimalist manual. A study by Li et al. (2015) summarizes that there are four aspects affected by cultural differences: structure, style, visual design and user behavior (Li et al., 2015). Li et al. (2015) defined that structure is related to organization and arrangement of documents, such as content organization, order of information, and so on; visual design addresses the layout of document, and the use of visual elements, such as figures, line drawings, and so on; style approaches the use of language in technical documents. In this paper, four documentation elements will be examined: structure, style, visual design and error information.

Furthermore, when we discuss the theories for technical communication design in the Western world, Minimalism is an influential approach. To be specific, Minimalism is a theory or model that formulates guidelines to design instructions with Western users' cultural preferences. SwipeGuide creates all its documents according to the Minimalist principles. Therefore, this paper aims to investigate whether a manual designed by Minimalism, a typical Western technical documentation design theory, benefits Chinese users as much as Western users.

This study will propose a theoretical framework to relate Minimalist principles to specific documentation elements: structure, style, visual design and error information, to examine the differences between Chinese and Western users in the perception of the Minimalist manual. If it is proved that similar to Western users, Chinese users also benefit from the Minimalist manual. It will be good news for companies whose products targeting Chinese users. Because they can save the

budgets used to investigate cultural differences in documentation writing for Chinese users. In brief, this study may help technical communicators better understand the effects exerted by cultural differences on users' perception of the Minimalist manual, and provide companies with strategies of documentation design for Chinese users.

In the following part (part 2), the theoretical framework will be presented. In part 3, the methodology will be stated. Part 4 is Results, and Part 5 is Discussion.

2. Theoretical Framework

Van der Meij (1995) provided a well-rounded overview of the principles and explanation in Minimalist instruction creation. Specifically, four Minimalist principles are elaborated. In this section, each Minimalist principle is associated with four main documentation elements with their sub-aspects in brackets: structure (content organization, structure logic, headings and page design), writing style (direct/indirect writing style and terminology), visual design (visual content, text-graphic relationship and visual type preference for real/cartoon pictures) and error information (location of error information).

2.1 Minimalist principle 1: choose an action-oriented approach

The foremost principle to design Minimalist instructions is to "provide an immediate opportunity to act", that is, action-oriented approach (Van der Meij, 1995). Van der Meij pointed out that many tutorials starting with non-task and general information resulted in being distracted, as they were subjected to prerequisites over direct actions. Therefore, he suggested giving users "less to read but more to do."

Following this Minimalist principle, the structure and visual design of Western user manuals are markedly different from that of Chinese user manuals (see Table 1). Specifically, two aspects of the structure (content organization and structure logic) and one aspect of visual design (visual content) will be discussed. As to the content organization and visual content, Western user manuals are action-oriented, while Chinese user manuals are context-oriented. Concerning structure logic, Western user manuals focus on specific tasks, while Chinese user manuals are chronological. The distinction is believed to be rooted in different thought patterns and cultural patterns (Ding, 2003).

Regarding thought pattern, Nisbett, Peng, Choi and Norenzayan (2001) argued that the cognitive processes of East Asian people are characterized as holistic, while Westerners favor an analytical approach. Holistic thought is defined as perceiving an object within the context as a whole, whereas analytic thought is to detach the object from the context and emphasize its attributes. The differences in thinking patterns affect the way people structure and design technical documents.

Concerning cultural patterns, Chinese culture is high-context, favoring a contextual thinking style, while Western culture is low-context, advocating direct and analytic thinking style. In a high-context culture, "issues would be expected to have lower clarity and specificity and their meaning to be contingent on context" (Stewart & Bennett, 1991). This thinking style "involves a high degree of

sensitivity to context [and] relationships [among individual events]" (Stewart & Bennett, 1991), and it emphasizes the integrity between context and single events. Therefore, specific steps that help users to establish a context to perform the tasks are more important than those steps that actually help users to complete tasks. Conversely, in the low-context culture, direct and specific communication that are designed to resolve problems are preferred. Westerners are inclined to "see events as problems to be solved . . . so courses of action can be recommended that will rectify the situation" (Stewart & Bennett, 1991).

Indeed, the distinction of thinking patterns and cultural patterns will affect the way a technical communicator writes a manual. Several studies provide evidences for that in visual design and documentation structure of manuals. As to the visual design (visual content), Wang (2000) compared visuals appearing in Chinese and American science magazines and manuals. The researcher found that "American manuals emphasize task performance. Illustrations are more detailed, larger in size, and prominently marked", while Chinese manuals emphasize products' technical information. Ding (2003) studied *Yi Jing* (*I Ching*) and then compared a Chinese manual and an American manual. He found that in the American manual, graphics are also action-oriented, that is, directly presenting actions or displaying actions articulated in verbal description, while the visuals in the Chinese manual also "focus on context by showing relationships between various parts—that is, their positions relative to each other". Because *Yi Jing* advocates "unity between nature and humans"(Yi Jing Editing Group, 1989).

For the content organization, a sub-aspect of documentation structure, Ding (2003) reported that American manuals emphasize task performance, focus on direct actions, and instruct users to perform tasks, while Chinese instructional manuals emphasize relations between different parts in instructions and provide contextual information rather than action-oriented information about how to perform a task. Wang (2000) showed that "when presenting a new idea to general readers, the Chinese tend to provide more contextual information, and the tasks, assembling or installing a product, are illustrated briefly." In addition, Stewart and Bennett (1991) (cited by Wang, 2000) concluded that the typical American communication pattern is "problem oriented, direct, explicit, personal, and informal". The clues can be proved by the fact that American manuals elaborate every steps extra explicitly to help users out. Y. Wang and D. Wang (2009) studied the differences between the German and Chinese user manuals in the presentation and perception of technical information. Regarding the content organization, they reported that "a system was structured on the basis of an entire interrelation or context in the Chinese documents, but individually and separately structured as individual elements in the German ones."

For the structure logic, another sub-aspect of structure, Barnum and Li (2006) reported that Western technical manuals are more task-oriented, while Chinese manuals prefer the inductive and chronological way of presenting information. Likewise, Wang (2000) found that Western technical documentation focuses more on specific tasks, while Chinese science articles and user manuals are commonly structured from basic to advanced and from familiar to unfamiliar.

Based on the differences mentioned above, in this empirical study, it is assumed that Chinese participants may not have a good perception of content organization, structure logic and visual

content of the Minimalist manual as their Western counterparts. To be specific, Chinese participants may complain about the lack of contextual information in visuals and at the beginning of the Minimalist manual, as well as perceive the structure of the manual as non-chronological.

Table 1

Structure and Visual Design Related to Principle One

No.	**Chinese**	**Western**	**Sources**	**Type**
1	Chinese instructional manuals **emphasize relations between different parts** in instructions and **provide contextual information**.	American manuals emphasize task performance, focus on direct actions, and instruct users to perform tasks.	(Ding, 2003)	Structure-Content Organization
2	**More contextual information** is provided when introducing a new idea to the general audience.		(Wang, 2000)	Structure-Content Organization
3		The typical American communication pattern is "**problem oriented, direct, explicit**, personal, and informal" (p. 155).	(Stewart and Bennett,1991)	Structure-Content Organization
4	Regarding the content organization, **a system was structured on the basis of an entire interrelation or context** in the Chinese documents.	Regarding the content organization, a system was **structured individually and separately** in the German ones.	(Y. Wang, & D. Wang, 2009)	Structure-Content Organization
5	Chinese manuals prefer **inductive and chronological way** of presenting information.	Western manuals favor **businesslike and task-oriented.**	(Barnum & Li, 2006)	Structure-Structure Logic
6	Chinese science articles and user manuals are commonly **structured from basic to advanced and from familiar to unfamiliar.**	Western technical documentation more **focuses on specific tasks.**	(Wang, 2000)	Structure-Structure Logic
7	Chinese manuals emphasize products' technical information.	Visuals in American manuals emphasize task performance.	(Wang, 2000)	Visual Design-Visual Content
8	The visuals in the Chinese manual also "focus on context by showing relationships between various parts—that is, their positions relative to each other" (p.340).	American manual, graphics are also action-oriented, that is, directly presenting actions or displaying actions articulated in verbal description.	(Ding, 2003)	Visual Design-Visual Content

2.2 Minimalist principle 2: anchor the tool in the task domain.

Van der Meij (1995) wrote that "Minimalist instruction is always anchored in the task domain." In other words, tasks included in a manual are "core tasks of the application domain", to the maximum extent possible (Carroll 1990; Van der Meij, 1992). It is these core tasks that are closely relevant to users' interest and personal needs motivate users to use a product. To be specific, one of the critical sub-principle is "component of the instruction should reflect the task structure" (Van der Meij, 1995). It mainly highlights the structural organization of manuals. In this case, it means headings should be created to help convey precise information to users or to facilitate users to locate the information they need.

In line with this Minimalist principle, the structural organization element, that is, headings of Western user manuals differs from that of Chinese user manuals (see Table 2). Specifically, Western user manuals are featured by more headings.

There is evidence in previous studies. Barnum and Li (2006) investigated the cultural forces shaping the way Chinese and American technical documents are perceived and created. They found that American manuals use more heading, while Chinese documents eschew headings.

This difference also results from the distinction between thought patterns. As mentioned above, Chinese people prefer holistic to analytical thinking patterns, which resulted in their preference for integrated manuals. In this case, document design elements, such as headings, are not as frequently used in Chinese manuals in order to avoid interrupting the flow.

Therefore, in this empirical study, it is assumed that compared with their Western counterparts, Chinese participants may not appreciate the use of headings in the Minimalist manual and would think that may interrupt the reading flow.

Table 2

Structure Related to Principle Two

No.	**Chinese**	**Western**	**Sources**	**Type**
1	Chinese technical documents **eschew headings.**	American manuals use **more headings**.	(Barnum & Li, 2006)	Structure-Headings

2.3 Minimalist principle 3: support error recognition and recovery.

Previous studies (Carroll & Rosson, 1987; Van der Meij, 1993) illustrate that 25%-50% of learners' time is spent on error correction. Eliminating mistakes could be time-consuming and frustrating. Therefore, information related to error detection, diagnosis and correction information is encouraged in Minimalist manuals.

Firstly, Van der Meij argues that the best way to eliminate mistakes is to offer users prevention information whenever possible. Several solutions were mentioned: minimizing the use of jargon; including hints in technical documentation, such as the use of page design elements, and signaling action information clearly, such as providing clear pictures corresponding to the textual explanation.

Secondly, Minimalist manuals advocate providing "on-the-spot error information" (Van der Meij, 1995), because proximal positioning helps users detect mistakes early, aids users in understanding the correct contextual information of a problem state, and encourages users to explore information related to error correction. All these will be less possible to occur if error information is placed separately (Van der Meij, 1995).

In line with this Minimalist principle, the page design, terminology usage (a sub-aspect of writing style), two aspects of visual design (text-graphic relationship and visual type preference for real/cartoon pictures) and location of error information of Western user manuals differ from that of Chinese user manuals (see Table 3). Specifically, Western user manuals are featured with more page design elements, avoidance of difficult terms, preference for real pictures and on-the-spot error information, while Chinese user manuals are characterized by less page design elements, obscure jargon without explanation, and preference to cartoon pictures and separate error information. Evidences from previous studies are presented as follows.

Firstly, for the page design, Wang (2000) found that American manuals adopt more emphasis markers, such as bold font and icons, for unwanted statement, including notes and warnings, which however were not detected in Chinese manual. Barnum and Li (2006) pointed out that in American manuals, writers are required to analyze readers' needs and provide them with explicit signals for selective reading, while "Chinese technical documents, especially those intended for officials or decision-makers, usually lack page design elements such as controlled use of white space, in-text emphasis, diagrams, lists, a variety of type sizes and fonts, and so forth."

Secondly, as to the terminology usage, Van der Meij and Lazonder (1993) claimed to avoid unnecessary jargon in Minimalist instruction, but Zhu and St Amant (2007) revealed a tendency in Chinese technical documents to use highly technical terminology to convey information without corresponding explanation or definition.

Thirdly, regarding visual design, the main differences are reflected in two aspects. First is the text-graphic relationship. Graphics are often presented with corresponding written descriptions in technical manuals. Two types of text-graphic relationships were identified by Ballstaedt (1996): elaborative and redundant. The elaborative relationship refers to the mutual complementation

between the text and graphics. The redundant relationship means that the text provides the same information as the illustrations.

Studies showed that there is a difference between the text-graphics relationship in Chinese and Western technical documents: complementary and loosely connected in Chinese manuals and redundant and closely connected in Western manuals. Wang (2000) compared visuals appearing in Chinese and American science magazines and manuals. The author found that "the correspondence between Chinese visuals and texts is loose and inaccurate: there is no direct correspondence between the illustration and the textual explanation. However, Americans visuals and texts are closely integrated: each graphic is labeled and referred to in the caption". Y. Wang and D. Wang (2009) also reported that "more graphics and an elaborative relationship were found in the Chinese documents." The Chinese technical documents presented "a strong complementary relationship between text and graphics". Additional information, which was not included in graphics, was conveyed by the text. Nevertheless, the German technical documents showed "fewer graphics and a parallelism between graphics and text".

Second is visual type preference for real or cartoon pictures. Lombard (1992) reported that cartoon pictures were used in Japanese technical manuals to reduce the complexity of changeling tasks and make them seem like fun. Nevertheless, cartoons are not frequently used in American technical documentation. It is believed to relate to the difference between high-context and low-context cultures that are mentioned previously. Japan is a high-context country, so it favors cartoons with lower realism. Nevertheless, America is a low-context country, so it prefers pictures with high realism (Carpenter, 2005). Since China is also characterized as a high-context country and Chinese cultures share some similarity with Japanese cultures in some aspects, we may infer that Chinese users might also prefer cartoon pictures.

Finally, with regard to the location of error statement, Van der Meij et al. (1993) followed the rule of offering "on-the-spot" error information when designing their Minimalist manual. However, Han (2009) examined four Chinese culinary instructions and argued for "a historicized and contextualized understanding of technical communication in China". Han found a trend in the evolution of Chinese culinary instructions. That is the number of on-the-spot warnings has decreased; more separate warning or precaution sections occur in modern instructions. Han attributed the change from local to centralize to the increasingly specialized field of study and mature theoretical cooking knowledge.

The differences between Western and Chinese manuals in page design, terminology usage, visual design and placement of error information may be explained by two different types of writing: reader-responsible type versus writer-responsible type. Hinds (1986) held that Chinese writing belongs to the reader-responsible type, whereas American writing is the writer-responsible type. The reader-responsible type indicates that it is the readers' responsibility to infer the meaning from the texts; In this case, the writer will not think about users' need and apply measures to improve their understanding and help avoid mistakes. Instead, users should read manuals carefully and interpret the given information correctly. The writer-responsible type means that it is the writers' responsibility to ensure readers comprehend the information presented in technical documents

(Hinds, 1986). In this sense, writers are required to know what exactly users want and provide them with appropriate scaffold to use the manuals with less misunderstanding.

Based on the differences discussed before, in this empirical study, it is assumed that Chinese participants may not appreciate the page design, terminology usage, the use of real pictures and placement of error information of the Minimalist manual as well as their Western counterparts. To be specific, Chinese participants may complain that the page design is overloaded and they do not mind the inclusion of difficult terms in the Minimalist manual. Furthermore, they may support to replace real pictures with cartoon pictures and put error information in a specific chapter, separate from steps.

Table 3

Structure, Writing Style, Error Information and Visual Design Related to Principle Three

No.	**Chinese**	**Western**	**Source**	**Type**
1	**Less page design elements** are found in Chinese manuals.	American manuals adopt **more emphasis markers**, such as **bold font and icons**, for the unwanted statement, including notes and warnings	(Wang, 2000)	Structure-Page Design
2	"Chinese technical documents, especially those intended for officials or decision-makers, usually **lack page design elements** such as controlled use of white space, in-text emphasis, diagrams, lists, a variety of type sizes and fonts, and so forth."(p.150)	In American manuals, writers are required to analyze readers' needs and provide them with **explicit signals for selective reading**.	(Barnum & Li, 2006)	Structure-Page Design
3	Chinese technical documents **use highly technical terminology to convey information without corresponding explanation or definition**.	**Avoid unnecessary jargon.**	(Zhu & St Amant, 2007) (Van der Meij & Lazonder,1993)	Writing Style-Terminology
4	The number of on-the-spot warnings has decreased; **more separate warning or precaution** sections occur in modern instructions.	Offer **"on-the-spot" error information**.	(Yu, 2009) (Van der Meij et al.,1993)	Error information
5	**Complementary and loosely connected** in Chinese manuals	**Redundant and closely connected** in Western manuals.	(Wang, 2000)	Visual Design-Text-graphic relationship
6	Chinese users might **prefer cartoon pictures**.	**Cartoons are not frequently used** in American technical documentation.	(Lombard, 1992)	Visual Design-Visual type

2.4 Minimalist principle 4: support reading to do, study and locate

The ways users read a manual varies from person to person. But users are not assumed to read manuals cover to cover (Van der Meij, 1995) and most users' way of reading is action-oriented (Carroll, 1984). To support this kind of reading strategy, instructions are required to be concise and direct to facilitate users to locate and get the information they want as quickly as possible.

In accordance with this Minimalist principle, the writing style of Western user manuals is different from that of Chinese user manuals (see Table 4). Specifically, Western user manuals are direct, while Chinese user manuals are indirect, trying to build a good relationship with users by indirectness.

There are some evidences from previous studies. Barnum and Li (2006) investigated the cultural forces shaping the way Chinese and American technical documents are perceived and created. They summarized that American manuals are featured by concise and simple text, whereas Chinese manuals tend to be characterized as wordy and lengthy. In addition, Westerners are prone to comply with a linear (direct) pattern in their writing, while Chinese follow nonlinear or indirect patterns. Zhu and St Amant (2007) analyzed possible cultural factors affecting American users' perception of a Chinese-created website. They found a trend that the Web site's author tended to be indirect when introducing central points. Furthermore, they noted that the indirect pattern also exists in individual paragraphs. In this case, paragraphs do not proceed with a topic sentence at the very start. On the contrary, information is presented in a spiral manner. Besides, in terms of sentence level, Western manuals provide specific and detailed information, while Chinese manuals present ambiguous information. Wang (2000) discovered that in a user manual for refrigerator, when it came to the heavy load the refrigerator could bear, neither specific examples of heavy objects nor the specific value of the weight is provided.

The differences between Western and Chinese technical documentation features in style stated above are related to cultural rhetorical divide: high context and low context. Western countries are categorized as low-context culture nations, while China is regarded as a high-context country. In the low-context culture, the direct writing style is recommended, while in high-context culture, indirect and ambiguous information is presented in manuals.

Additionally, the indirectness of Chinese technical manuals is also related to the intention to save face (external public appearance) (R. Scollon & S. W. Scollon, 1995). If a good face relationship between writers and readers is expected to be built, the nonlinear writing pattern is recommended, because it may reduce discord. Furthermore, R. Scollon &S. W. Scollon (1995) mentioned in their book that the amount of talk would lead to different feeling concluded by some psychological studies. The more talk is associated with emotional warmth, while the converse yields emotional distance. Hu and Grove (1999) confirmed the face-saving theory and reported that when Chinese people need to convey negative information, they would adopt indirect methods to maintain harmony.

However, there are studies refuted that Chinese communicators also adopt directness and conciseness in their technical documentation. For example, Han (2009) analyzed culinary texts from

500 BC to the present and advocated "a historicized and contextualized understanding of technical communication in China". She discovered that these ancient Chinese culinary instructions are comparable with the streamlined-step procedure modeled by Farkas (1999), which is common in the contemporary West: brief steps, simple format, imperative verbs used to build action statements. At the end of the paper, the author repeated that "Chinese culinary instructions have historically and consistently preferred succinct language and simple sentences".

Therefore, in this empirical study, it is assumed that Chinese participants may not think highly of the writing style of the Minimalist manual as well as their Western counterparts. To be specific, Chinese participants may complain the Minimalist manual is cold, and favor a bit wordy version of user manuals, such as more conversational or emotional manuals (that is, adding personal elements, like a close solution to users, to build a friendly relationship with users). However, there are also evidences arguing Chinese manuals also prefer concise language. Therefore, another possibility is that there may not be any differences between Chinese users and their Western counterparts in the perception of direct and clear writing style.

Table 4

Writing Style Related to Principle Four

No.	**Chinese**	**Western**	**Source**	**Type**
1	Chinese follow **nonlinear or indirect patterns**. Purpose: build a good relationship with customers.	Westerners are prone to comply with a **linear (direct) pattern** in their writing	(Wang, 2000)	Writing Style-indirect/direct writing style

2.5 Conclusion

To sum up, in the theoretical framework, the four Minimalist principles are related to specific sub-aspects of four main document elements: structure, writing style, visual design and error information. A brief summary is presented in Table 5.

Table 5

Minimalist Principles and Documentation Elements

Minimalist Principle (MP)	**Categories**	**Sub-aspects**
MP1	Structure	Content Organization
	Structure	Structure Logic
	Visual Design	Visual Content
MP2	Structure	Headings
MP3	Structure	Page Design
	Writing Style	Terminology
	Error Information	Location of Error Information
	Visual Design	Text-graphic Relationship
	Visual Design	Visual Type Preference for Real/Cartoon Pictures
MP4	Writing Style	Direct/Indirect Writing Style

3. Methodology

3.1 Research Design

To answer the research question, a quasi-experiment was executed with both quantitative and qualitative approaches. For the quantitative part, the independent variable is participants' cultural background (Chinese versus Western). Dependent variables are usability of the user instructions and motivation to use the instructions. Participants were required to perform some tasks with Satinelle Prestige BRE-650, a Philips epilation device for different body parts, such as legs, arms, underarms. And then two questionnaires were required to fill out. For the qualitative part, a 25-minute interview was conducted.

3.2 Materials

The manual for Satinelle Prestige BRE-650 is presented on mobile as an app and developed by SwipeGuide, a startup creating a ready-to-use cloud platform that enables anyone to write, edit, publish and deliver visual step-by-step instructions easily. The manual is to support the development of the participants' skills to use the Philips product. To be specific, the tasks chosen for participants to get familiar with the device are two categories: 1) "Attaching caps & combs"; 2) "Change & replace parts".

3.2.1 English Manuals of Satinelle Prestige BRE-650

The English manual of Satinelle Prestige BRE-650 is created by SwipeGuide based on Minimalist theory. The company has updated its SwipeGuide manual so far, so the screenshots provided in this paper are a bit different from that viewed in the empirical experiment. However, in general, the updated version is almost the same as the old version. A more detailed explanation is as below.

Minimalist principle one is "choose an action-oriented approach" (Van der Meij, 1995), which means starting with information about how to perform a specific task instead of a lengthy explanation. The manual of Satinelle Prestige BRE-650 fully observes this rule. It starts with "Getting Started" part, where two simple tasks are presented (See figure 1 and 2).

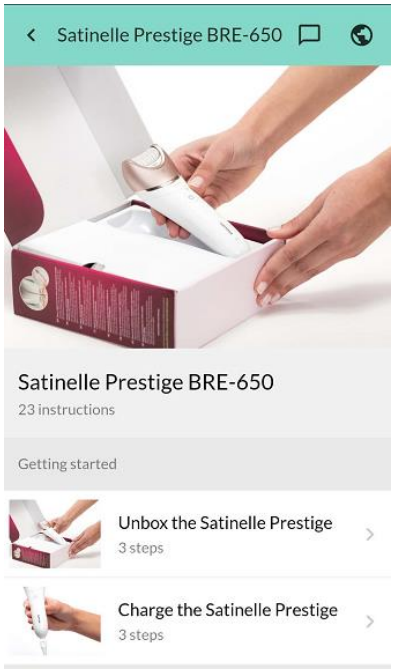

Figure 1 Action orientation

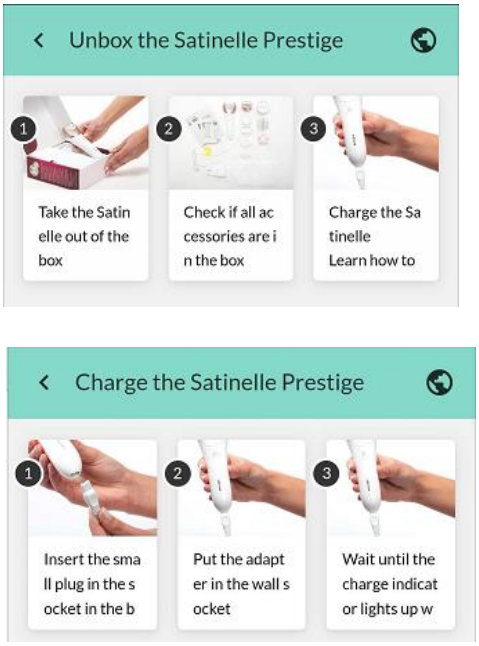

Figure 2 Action orientation

Minimalist principle two is “anchor the tool in the task domain” (Van der Meij, 1995). One of the important sub-principle discussed in this study is "component of the instruction should reflect the task structure" (Van der Meij, 1995). It means headings should be created to convey information to users clearly, or help users to find the information they need efficiently. The manual of Satinelle Prestige BRE-650 follows this principle and is featured by clear headings and sub-headings, which give a good overview to users. (See figure 3 and 4).

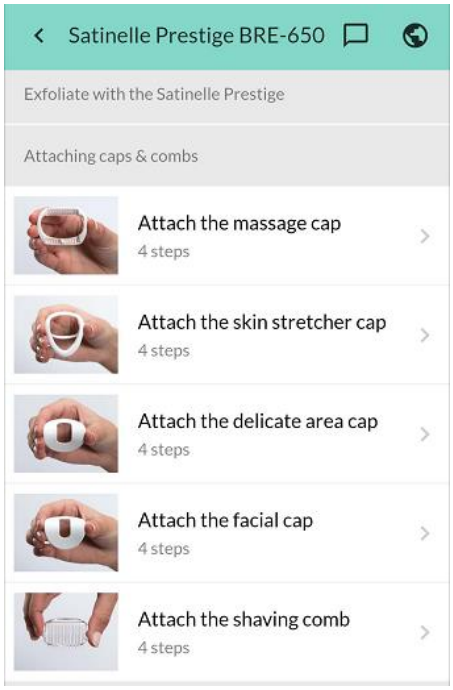

Figure 3 Clear headings

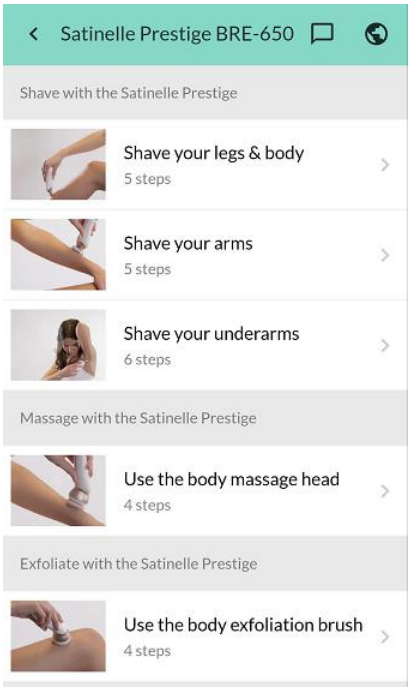

Figure 4 Clear headings

Minimalist principle three is “support error recognition and recovery” (Van der Meij, 1995). That means the Minimalist manual encourages error detection, diagnosis and correction information. Several solutions were recommended, such as signaling action information clearly and providing "on-the-spot error information" (Van der Meij, 1995). Guided by this principle, the manual of Satinelle Prestige BRE-650 offers step-by-step instruction and each step is illustrated by corresponding pictures labeled by numbers. Furthermore, warnings, tips, alternative methods and fixes are put in the buttons at the bottom of each step (see figure 5 and 6).

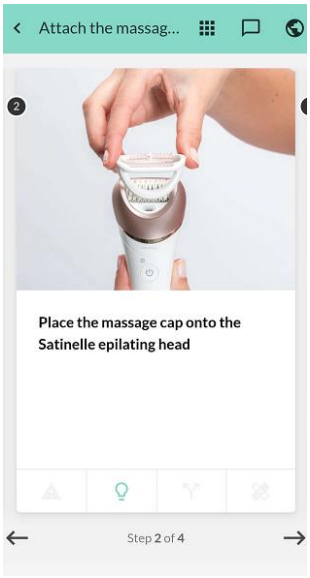

Figure 5 Corresponding pictures and texts

Figure 6 On-the-spot error information

Minimalist principle four is “support reading to do, study and locate” (Van der Meij, 1995). One strategy investigated in this study is to make a concise and direct manual, helping users to locate and get the information as quickly as possible. In line with this principle, the writing style of the manual of Satinelle Prestige BRE-650 is clear and direct, just providing information relevant to how to use the device (see figure 7 and 8).

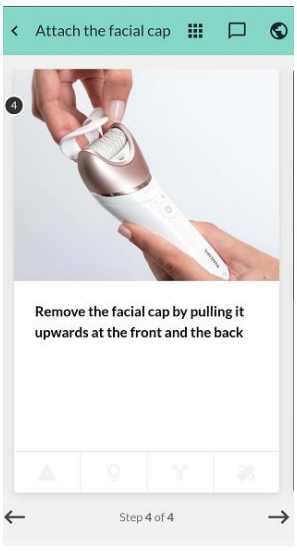

Figure 7 Direct Writing Style

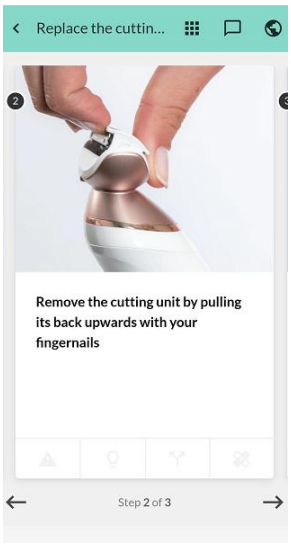

Figure 8 Direct Writing Style

3.2.2 Chinese Manuals of Satinelle Prestige BRE-650

The Chinese version of Satinelle Prestige BRE-650 Minimalist manual is a direct translation of the English version of Satinelle Prestige BRE-650 Minimalist manual. In the process of translation, the manual did not adopt any cultural-based localization. The translation is proofread by a professional translator with 7-year translation work experience, which helps to minimize the negative effects resulting from non-equivalent translation.

3.2.3 Interview Questions

The interview questions include the following four main documentation elements with their sub-aspects in parentheses: structure (including content organization, structure logic, headings and page design), writing style (direct/indirect writing style, terminology), visual design (visual content, text-graphic relationship and visual type preference for real/cartoon pictures) and error information. In order to know more about participants' opinion about content organization and their general experience of using a manual, two more aspects were added to the interview questions: content and general experience. In analysis, content is discussed with content organization. The information about general experience turned out to be irrelevant with four Minimalist principles. Therefore, this part was excluded from the Results part.

3.2.4 Knowledge Tests

In the pretest, the author found that participants could finish some tasks without referring to the manual, because the device used in the experiment is not so complicated. Furthermore, the observation in the experiment also revealed that some participants were not willing to read manuals and preferred trial and error. Therefore, in order to encourage participants to read more about the manual, two knowledge test (see Appendix 3) were added.

3.2.5 Questionnaires

Participants' motivation and usability of using the Minimalist manual were measured in this study. For motivation, the Instructional Materials Motivation Survey (IMMS) (Keller, 2010) is used. In IMMS, there are four variables: Attention, Relevance, Confidence and Satisfaction (ARCS). Examples of questions for the four variables are as follows:

There was something interesting at the beginning of this manual that got my attention. (Attention)
The content of this manual is relevant to my interests. (Relevant)
This manual was more difficult to understand than I would like for it to be.(Confidence)*
I really enjoyed using this manual. (Satisfaction)

Cronbach's alpha was used to assess the reliability of IMMS. The Cronbach's alpha value of Attention, Relevance, Confidence, and Satisfaction were .823, 0.635, .813 and .860 respectively, indicating the reliability of these four variables in IMMS.

For usability, the System Usability Scale (SUS) (Bangor, Kortum & Miller, 2009) is adopted. Examples of questions in SUS are as follows:

I think that I would like to use this manual frequently.
I found this manual unnecessarily complex.

Cronbach's alpha was used to assess the reliability of SUS. The Cronbach's alpha value of the SUS is .772, indicating the reliability of this questionnaire.

3.3 Participants

The participants are 48 students from University of Twente: 24 students from Western culture and 24 students from China. Among the Western participants, 19 people are from Dutch; 3 people are from German; and 2 people are from Canada. All Chinese participants are from mainland China. The number of males and females are equal within each group. There is no big gap in the number of participants with technical or non-technical background between groups. However, statistics results show that there is a significant difference between Chinese and Western groups in participants' age ($t(46) = 2.22$, $P = .03$). Chinese participants are a bit older than Western participants.

Table 6

Participant Distribution

	Chinese Participants	Western Participants
Female	12	12
Male	12	12
Technical	16	13
Non-technical	8	11
Mean Age	24.28	22.75

3.4 Procedure

The experiment was conducted in a meeting room. All participants used the same smartphone. At the beginning of the experiment, the researcher gave a brief introduction to the experiment. Afterwards the participants were asked to read and sign a consent form. Then each participant was given two pieces of printed paper with a hands-on task list and written knowledge tests to make sure that they do read the manual.

First, they had five minutes to browse through the manual and look at the device. Afterwards they had 10 minutes to operate the device based on given tasks and then 10 minutes to do the written knowledge tests. During this period, the researcher observed the participants' operation and took notes of participants' performance, but did not communicate with them. After the task performance, participants were required to fill out two questionnaires. Finally, the research conducted an average 25-minute interview with all participants. Participants' answers were recorded by a cell phone recorder.

3.5 Data Processing

The study applied both quantitative and qualitative approaches. For the quantitative part, motivation and usability of Chinese and Western groups were compared by conducting an independent samples t-test.

For the qualitative part, the interviews were analyzed. Specifically, the recorded audios were transcribed word by word. The coding started after a double check of the transcript. In general, the coding process was guided by Hruschka, Schwartz, John, Picone-Decaro, Jenkins & Carey (2004) and followed the steps: segment texts, create codebook, code texts, calculate reliability and finalize coding.

Since interview questions are structured in terms of four main documentation elements: structure (including page design), writing style (including terminology), visual design and error information and Error information. And there are also two extra aspects: content and general experience. The rough segmentation of texts is based on these document elements. The codebook is created in accordance with the said documentation elements as well, for example as to the segmentation related to structure, all codes start with “Structure: ”; for segmentations related to writing style, all codes start with “Writing style: ” . To be specific, a bottom-up method was employed. Five Chinese interviews and five English interviews were randomly chosen and then essential quotations were coded. After the coding of ten interviews was finished, all codes were re-examined by the relevance of interview questions and research questions. Finally, a complete code list was created. The coding was done by the software ATLAS.ti.

In addition, four interviews, two Chinese and two English interviews (about 10% of the total interviews) were selected randomly from 48 interviews. Two second coders were recruited. The reliability of the codebook was assessed by Cohen’s kappa. The Cohen’s kappa value of the coding for two English interviews was 0.61 and for two Chinese interviews was 0.65, thus indicating the reliability of the coding cook for both Western and Chinese groups.

4. Results

This section presents quantitative and qualitative results of the empirical experiment.

4. 1 Quantitative Results

Two questionnaires called IMMS and SUS were used in this experiment to measure two dimensions: motivation and usability separately. The results are shown in this sub-section.

4.1.1 Motivation

Independent samples t-test was used to assess differences among four variables: attention, relevance, confidence and satisfaction in the questionnaire of IMMS between the Chinese group and Western group. From the table, we could see that there was a significant difference between Chinese and Western groups in Attention (P Value=.04). The Western group had a higher score of Attention than Chinese group. It indicated that Western group gave a better evaluation of the Minimalist manual in Attention than Chinese group. However, the differences between Chinese group and Western group were not significant in Relevance, Confidence and Satisfaction.

Table 7

Comparison of Chinese and Western Users in Motivation

Variables	Nationality	Mean	Std. Deviation	T-test Value	P Value
Attention	Chinese	3.25	.18	-2.15	**.04**
	Western	3.64			
Relevance	Chinese	3.49	.17	1.50	.14
	Western	3.24			
Confidence	Chinese	3.99	.18	-1.48	.15
	Western	4.26			
Satisfaction	Chinese	3.05	.26	-.33	.74
	Western	3.13			

Note: The IMMS applies five-point scales. 1 stands for “not true” and 5 stands for “very true”.

4.1.2 Usability

Independent samples t-test was used to assess the differences of the Minimalist manual’s usability between Chinese group and English group. From the table, we could see that there was a significant difference between Chinese group and Western group in usability (P value=.02). Western group had a higher score of usability than Chinese group. It implied that Western group had a better perception of the Minimalist manual in usability than Chinese group.

Table 8

Comparison of Chinese and Western Users in Usability

Variables	Nationality	Mean	Std. Deviation	T-test Value	P Value
Usability	Chinese	3.58	.17	-2.53	**.02**
	Western	4.00			

Note: The SUS uses five-point scales. 1 stands for “strongly disagree” and 5 stands for “strongly agree”.

4.2 Qualitative Results

The interview questions addressed the following four main documentation elements with certain sub-aspects in brackets: structure (content organization, structure logic, headings and page design), writing style (direct/indirect writing style and terminology), visual design (visual content, text-graphic relationship and visual type preference for real/cartoon pictures) and error information (location of error information). In order to know more about participants' opinion about content organization, a sub-aspect of structure, one more documentation element—content—is added to the interview questions.

4.2.1 Structure

In interviews, participants talked about the structure and content of the manual. Their opinions are listed in Table 9 in Appendix 1. As to the structure of the manual, the interview questions mainly focus on four sub-aspects: content organization, structure logic, headings and page design. The additional aspect "content" is analyzed together with content organization, as these two aspects are closely related.

4.2.1.1 Content Organization

About content organization, both Chinese and Western groups showed a negative attitude toward the inclusion of contextual information. Most participants said they would not read it or would skip it. For both groups, the main reason to exclude contextual information from the manual was that the participants preferred action-oriented information. The participants said the primary purpose to read the manual was to learn how to use the device. Thus, the information about how to operate the device was the most important for them. Therefore, they showed a keen interest in how to use the device rather than how the device worked. As an interviewee said:

"Emm… I think that will be too detailed. I don't think that is necessary for like the average users to know. Maybe if you enter biology or technology, like you have, I don't know, interest in it. Then it's good. But I think average users just want to know how to use it, how to take care of it, how to store it. So I don't think it's necessary." (Female, Non-technical, English)

For the Chinese group, the extra second reason against contextual information was that it was unnecessary to add contextual information in the manual. Participants told that they were supposed to search or study this kind of contextual information about the product before they bought it. As an interviewee said:

"In my view, information about the advantages of the device should be known before you buy this product. Therefore, it's unnecessary to present this kind of information in a user manual. "
(Male, Technical, Chinese)

Nevertheless, both in Chinese and Western groups, some participants agreed to add contextual information in the user manual. In particular, there were almost half Chinese participants voting for

it. The main reason was that they wanted to know more about safety information, that is, the information about whether the device would be a threat to other people or whether the use of the device would do harm to their own body. As interviewees said:

"As a whole, the content is good. But what I wanna pay more attention to information about safety, for example, 'it's should be placed beyond children's reach'. Or whether some people are not suitable to use the device, or whether some people should pay special attention when they use the device. " (Male, Technical, Chinese)

"I want to know whether the use of the device will do harm to my skin." (Female, Technical, Chinese)

In addition, as to the inclusion of contextual information, a small group of Chinese and Western participants provided some suggestions about the location of this kind of information in the user manual. The top three solutions given by both groups are adding contextual information in buttons, in a separate manual, or at the end of the user manual, because both Chinese and Western participants agreed that the central part of the user manual should present the most crucial information, that is, how to use the device. As an interviewee said:

"I don't think the technical information is that important for the target group. You could add it, but under a special manual or something, but not in the main interface. Because it's the most important part of this manual I think. I don't think you have to sell the articles, because someone already bought it." (Male, Technical, English)

Thus, it could be seen that the participants from both groups showed little interest in the contextual information. Although half Chinese participants did mention that some contextual information about safety could be added into the user manual, together with their Western counterparts, they treated contextual information as additional information and suggested to place it in a less important place of the manual, such as, at the end of the user manual, in buttons, or even in a separate brochure.

On the other hand, two other aspects indirectly indicated Chinese and Western participants' objection to adding contextual information in the user manual. For one thing, most participants in Chinese and Western groups held that the user manual had provided comprehensive information, and they did not think any other information needed to be added. As an interviewee said:

"I think everything is important is addressed. So how to start with it, so the charging first. How to clean it ends up. So every step is covered. Every content I need is there. I didn't miss something." (Female, Non-technical, English)

For another, there were near half Chinese and Western participants complaining the repetition in the user manual, and around a quarter of Chinese and Western participants argued that there was a bit too much information in the manual. As an interviewee said:

"Second, in most slides, the first few slides are pretty much same, so I skip, skip, skip. Because I don't need it. So it's a bit too much information." (Male, Technical, English)

In conclusion, the dominant participants from both groups disapproved of adding contextual information at the beginning of the manual, and preferred a clean and concise manual. In other words, the manual is featured by action-oriented and only includes information about how to use the device. Although there were almost half Chinese participants hoping to add more safety information in the manual, they recommended adding this kind of contextual information as additional information in less prominent places, such as the end of the manual, in buttons at the bottom of the interface, or even in a separate brochure. Together with their Western counterparts, they pointed out that the most important content—all the functions of the device—should be presented first in the user manual. Therefore, there were no cultural differences in content organization.

4.2.1.2 Structure Logic

As to the structure logic of the manual, most Chinese and Western participants spoke highly of the structure of the Minimalist manual and they agreed that the structure of the manual is logical. It indicated that both Chinese and Western groups favored the current task-oriented manual. As an interviewee said:

"Yeah, it's good. First you have the epilating, shaving, massage, then attaching, change every part, then cleaning. Ya, in the good sequence." (Female, Non-technical, English)

However, among the participants who mentioned the structure logic of the user manual, the number of Western subjects who supported that the current structure of the manual was logical was slightly higher than that of their Chinese counterparts.

It is worth to mention that compared to the Western participants, there was also a larger group of Chinese participants thinking the structure of the user manual was not logical enough and suggesting to adjust the manual's structure. Two main reasons were mentioned: first, the current structure of the manual was non-chronological, and they thought that "Attaching caps & combs" and "Change & replace parts" should be placed ahead of specific functions, such as "Epilate with the Satinelle Prestige". Furthermore, they held that the current structure of the manual makes itself unconnected, so they suggested to combine some parts with each other, such as integrating "Attaching caps & combs" and "Change & replace parts" into different tasks, including epilate, shave, massage, exfoliate. As interviewees said:

"Secondly, the sequence of different parts in the manual is a bit weird. In my view, "Change & Replace parts" should be put after "Getting Started", then "Attach caps & combs", and then specific functions, such as epilate, shave, massage, etc." (Female, Non-technical, Chinese)

"In my view, "Attach caps & combs" can be integrated with specific functions, such as epilate, shave, massage, etc. Because caps and combs are related to those functions. If you put "Attach caps & combs" in a separate chapter, it makes me feel the user manual is not so integrated." (Female, Non-technical, Chinese)

In conclusion, more Western participants asserted the current structure of the manual was logical and more Chinese participants said the current structure of the manual was non-chronological and less integrated. Therefore, we could infer that there were cultural differences between Western and Chinese groups concerning the structure logic of the Minimalist manual.

4.2.1.3 Headings

Both Chinese and Western groups thought highly of the use of headings in the manual. The top two reasons are as follows. For one thing, participants found that headings gave them a good overview of the information in the manual, so that they could know the main contents of the manual quickly. For another, headings contributed to a well-organized manual, so they could find what they want efficiently. As interviewees said:

"It gives a good overview of everything what you can do with it." (Male, Technical, English)
"I think it's very useful. It's very much kind of index, so you can easily find the subject you are looking for." (Male, Technical, English)

In addition, there were only 2 or 3 participants from both groups complaining about the headings. What they concerned was that headings and subheadings led to too much hierarchy. As an interviewee said: *"But I said before, it's too many steps. So you have to open the big topic, then you get five under topics." (Female, Non-technical, English)*

To sum up, the empirical study found that both Chinese and Western groups showed a positive attitude toward the use of headings in the user manual. Chinese participants did not think headings interrupt their reading or thinking flow in this case. Therefore, regarding the use of headings, no cultural differences were found.

4.2.1.4 Page Design

Regarding the page design of the manual, most subjects in both groups showed a positive attitude about it. Some participants said the interface was nice and appealing and looked comfortable. The others said, although the app was not super fancy, its page design was clear and professional, and the navigation worked well. They did not want extra things since they could find what they need quickly. As an interviewee said:

"I think it's a very nice layout. It guides you to the manual is very clear, where you should click, how you should go. I don't any comments about that. I think the picture is very nice as well. Because it really shows you this is you should be looking at." (Male, Technical, English)

It deserves mention that in both groups, almost all participants complained that the buttons at the bottom of the interface for warnings, tips, alternative methods and fixes were not obvious. For example, some participants said the four symbols were not clear what they meant, and they could not identify the meaning from the symbol itself. The other said the information was hidden in the

buttons, so they did not notice there was useful information there. As an interviewee said:

"They have some icons in the manual. I did not notice they were there. So I do not know it could be used. It's not clear." (Female, Non-technical, English)

Two main solutions were put forward by both two groups. One was giving hints to users, including giving an explanation to what these four icons mean, and telling users at the beginning that there were four icons where you could see extra information. The alternatives were labeling the warning button with bright colors, and presenting a pop-up box to explain the four icons when users first look at them. The second solution was placing the important warning information in the normal manual. Participants said certain information in the warning button was very important, and they wanted to see it before they performed the task. Hence, they suggested putting such kind of critical information in the normal manual. Otherwise, they would easily miss it. As an interviewee said:

"Um, well, as I mentioned before, at first, I didn't know that they were buttons actually show more information and if as there are warnings, for example, that the machine can all be used without a cord, so not well charging. Um, that's kind of an important warning to me. And I would have definitely shown that directly. Instead of having the user first tap a button before showing the warning. Um, because at first, I didn't know that I can't use a machine while it's being charging." (Male, Non-technical, English)

Both solutions were mentioned by a larger number of Chinese participants compared to the Western counterparts. Especially for the second solution related to warnings and safety information, much more Chinese participants require to list this kind of vital information in the normal text, so they could see it immediately. It to some extent indicated Chinese people emphasized more on safety information and they wanted to use a device in a safe context, which was in line with the finding of content organization mentioned above.

In conclusion, as to the page design, both groups preferred the current design of the Minimalist manual. No big cultural differences were found.

4.2.2 Writing Style

The interviewees talked about the writing style of the manual and their opinions were presented in Table 10 in Appendix 1.

As to the writing style of the Minimalist manual, the interview questions mainly focus on two aspects: the participants' attitude toward direct or indirect writing style and the use of terminology.

The majority of Chinese and Western participants asserted that the manual was short but direct, as well as, simple but professional. In particular, no participants from both groups said they disliked the short writing style of this manual. For Chinese group, all 24 subjects liked the writing style, confirming a finding in a study by Han (2009) asserting that Chinese people preferred succinct language and simple sentences. Additionally, both Chinese and Western groups emphasized that

although the manual was short, every sentence kept to the point and the manual did not miss anything. Thus, they agreed to keep a clean the manual. Otherwise, it would be easy for them to get lost or feel annoying, if the extra and irrelevant information was given to make the manual lengthy. As an interviewee said:

"I think is fine. It's direct and short. It just explains what you need to do. If I read a manual, I want that, I don't need the whole story about everything." (Male, Technical, English)

Furthermore, when asked about the opinion of transferring current professional and direct manual into conversational or humorous style, most people in Chinese and Western groups disapproved of it. The main reason they mentioned was that a manual with conversational or humorous style would include redundant or irrelevant information. However, the participants only wanted to know how to use the device or how to resolve a problem. In particular, the participants underlined that they did not care about how the manual made them feel as long as they got the information from the manual. Therefore, the participants did not expect something informal or funny in the manual to distract their attention from core information, but prefer more direct and efficient manuals. As an interviewee said:

"Yeah, it may be nicer. But for me, it won't make difference, because I am a bit to like (a) business-like manual I guess. So I would just like looking answers and then just use it, instead of you have to go to some casual conversation, which basically means more words with the same (meaning). Then I prefer fewer words." (Male, Technical, English)

There are also some participants voting for the conversational or humorous style. They said reading a manual was a very boring thing. If the manual could be written in an informal or humorous style, it may look more interesting. However, only a very small number of participants shared this opinion.

Likewise, when asked about the opinion of transferring current professional and direct manual into emotional style, that is, a manual with more personal elements, like close salutation to users, most people in Chinese and Western groups did not agree to that. Here again, the main reason presented was that participants only wanted to know how to use the device and got the information as quickly as they could. Therefore, they did think it would make any sense to turn a direct manual into a bit wordy version. As an interviewee said:

"Um, I think that if a manual would start every page with dear user, please do this or have you tried that. I think that will be too much unnecessary words for me. Um, because as I said, for me, a manual should be short, concise, and clear about the task. I'm looking up, so in case of using the razor function, the shaving function, I just want the information about the shaving function and all the friendly words that just unnecessary for me." (Male, Technical, English)

One interesting observation was that compared with their Western counterparts, a half group of the Chinese participants thought that the direct manual was a bit cold. In their view, if the manual is personified, it looked like Siri, who was emotionless and just told users what they wanted. Nevertheless, they could get the information they wanted efficiently from such kind of manuals.

Hence, they did not view being cold as a bad thing. As an interviewee said:

"C: It looks like a cold and serious male in uniform.
X: Why?
C: As to the writing style of this manual, it keeps to the point and does not contain any redundant information.
X: What do you think of this kind of image?
C: I like it." (Female, Non-technical, Chinese)

Thus, it could be seen that for the participants' attitude toward direct or indirect writing style, both Chinese and Western group preferred more direct style and the cultural differences were not obvious in general. Chinese participants' perception of direct manuals as cold style is in accordance with previous studies.

In addition, with respect to terminology used in this manual, in Chinese and Western groups, most participants said there were no difficult terms in the manual and they were easy to understand. As an interviewee said: *"No, everything I read here is very clear to me." (Female, Non-technical, English)* Furthermore, both groups did not think it was smart to use highly technical terms in the user manual. The primary reason was that the use of difficult terms in the manual would make it harder to understand for users and make them feel frustrated. As a result, users may abandon the user manual. As an interviewee said: *"it's will be hard for me. I really have to concentrate on it if I have to try it out. Then I maybe stop using this manual." (Female, Non-technical, English)*

To sum up, both Chinese and Western subjects expected the user manuals to be simple and understandable without difficult terms. No cultural differences were found.

4.2.3 Visual Design

Interviewees talked about the visual design of the user manual. Their opinions are listed in Table 11 in Appendix 1. For the visual design of the user manual, interview questions highlight three aspects: visual content, text-graphic relationship and preference for real pictures or cartoon pictures.

4.2.3.1 Visual Content

In general, both Chinese and Western groups had a positive reflection about the use of visuals in this manual. They all said the pictures were nice and clear. Especially, there was a small number of participants from both groups emphasizing that the pictures were helpful, because they were action-oriented, corresponding with steps and showing what to do explicitly. Therefore, there were no cultural differences were found in visual content.

4.2.3.2 Text-graphic Relationship

Apparently, in both Chinese and Western groups, there were more than half participants favoring closely connected and redundant text-graphic relationship. The dominant reason mentioned by both

groups was that corresponding texts and pictures facilitated to eliminate confusion and allowed users to check the information they view again. As an interviewee said:

"I guess it's a nice confirmation. Maybe you read the text first, and then you may be still a bit confused. Then you see the picture. Even though maybe it contains kind of the same information, it might still help to get the same thing to explain in a different way." (Male, Technical, English)

Additionally, Western groups presented another reason why they opted for the closely connected and redundant text-graphic relationship, that is, this kind of design could provide users with more information. This was because users could get information both from texts and pictures. As an interviewee said:

"Well, actually it's pretty right underneath the picture itself. I think is more like when I browse through the manual myself, I look at the pictures to see what I need to do. If I don't understand the pictures I will read the text underneath. So it's good the text underneath is short. Just an extra information, so the picture you see." (Female, Non-technical, English)

It is worth to note that no one in the Chinese group showed a negative attitude to closely connected and redundant text-graphic relationship.

On the other hand, both groups disliked loosely connected and non-corresponding text-graphic relationship. When asked about the possibility to add more information either in texts or pictures, the majority of Chinese and Western participants said "no". As to the objection to adding more information in texts, participants explained that they could get the right information from current short and direct manual, so it was unnecessary to add more texts, as they would not read it. With regard to the objection to adding more information in pictures, participants said that the non-corresponding amount of information conveyed by texts and pictures would lead to a messy manual. Hence, they preferred the current closely connected and redundant text-graphic relationship. As interviewees said:

"Because this is already very good. And I already got what to do from this, why you will add more information. And I think oh I have to read that information, and then I read it. Then I would think oh, could I just look at the picture, I don't need to look at the information. So will get me annoying at the end." (Female, Non-technical, English)

"No, that will just make more confusing." (Male, Technical, English)

In conclusion, both Chinese and Western groups liked closely connected and redundant text-graphic relationship more than loosely connected and non-corresponding text-graphic relationship. As a result, as to the text-graphic relationship, no cultural differences were found.

4.2.3.3 Preference for Real Pictures or Cartoon Pictures

As to the preference for real or cartoon pictures, both Chinese and Western participants favored real

pictures and showed little interest in cartoon pictures. The top reason was that the realism of real pictures was higher than that of cartoon pictures, so real pictures were more understandable. In other words, it was easier for them to get the information they needed quickly. Meanwhile, the participants thought real pictures were more relevant and could boost their confidence, since they were given a sense that they could make it as well. On the other hand, cartoon pictures were depersonalized and made participants feel there was a distance between the manual and the real life. As an interviewee said: *"I think this is easier to understand. Because now it's real life, and see what the person is doing and mimic what she is doing." (Male, Technical, English)*

To sum up, both Chinese and Western groups voted for real pictures instead of cartoon pictures. Therefore, as to the preference for real or cartoon pictures, no cultural differences were found.

4.2.4 Error Information

Interviewees presented their opinions about error information of the Minimalist user manual in Table 12 in Appendix 1. As to the error information, the main point is related to the location of error information in the user manual.

As indicated by the table, most Chinese and Western participants preferred on-the-spot error information, that is, placing warnings, tips, and so on, close to steps. Participants said it was nice they could immediately see warnings, tips, and so on, in specific steps. Because this design provided information in the right place and in a right way. As an interviewee said: *"Because it's relevant for the step, so you have to find it in the step not somewhere else." (Male, Technical, English)*

Moreover, most people in both groups showed a negative response to the separate error information. The primary reason was related to accessibility. They said if the error information was placed in a separate chapter, instead of under each step, it would be hard for them to find the right information when they had troubles. As an interviewee said:

"No, I would probably not look at there. Because it's really messy. Something is wrong with massage cap, I would look at the massage cap, and maybe see there if something goes wrong. Otherwise, I have to really look for it." (Male, Technical, English)

There were also some participants from both groups agreeing to put error information in a separate chapter. The reasons were also relevant to accessibility. They said it would be easy for them to search the information they needed if there was a specific area for error information. However, only a very small number of participants shared this idea.

In conclusion, about the location of error information in the user manual, both Chinese and Western subjects chose on-the-spot error information. Therefore, no cultural differences were found in this aspect.

4.2.5 Conclusion

To sum up, the Results section gave an elaborated comparison between Chinese and Western users' perception of the Minimalist manual in terms of four main documentation elements. A brief summary of the results was presented in Table 13.

Table 13

Minimalist Principles and Documentation Elements

Minimalist Principle (MP)	Categories	Sub-aspects	Cultural Differences
MP1	Structure	Content Organization	No
	Structure	**Structure Logic**	**Yes**
	Visual Design	Visual Content	No
MP2	Structure	Headings	No
MP3	Structure	Page Design	No
	Writing Style	Terminology	No
	Error Information	Location of Error Information	No
	Visual Design	Text-graphic Relationship	No
	Visual Design	Visual Type Preference for Real/Cartoon Pictures	No
MP4	Writing Style	Direct/Indirect Writing Style	No

5. Discussion

5.1 Main Findings

This study applied quantitative and qualitative methods to examine the differences between Chinese and Western users in the perception of the Minimalist manual. For the quantitative part, the IMMS questionnaire was used to measure motivation and the SUS questionnaire was applied to evaluate usability. Quantitative results showed that the Western group gave a more positive evaluation to attention and usability for the Minimalist manual. Thus, it seems that in general, the manual based on Minimalist principles works better for Western users than Chinese users. As described in the theoretical framework, that is expected in literature.

On the other hand, the analysis of face-to-face interview data examined whether Chinese users as positively evaluated the Minimalist manual regarding structure, writing style, visual design and error information as their Western counterparts. When taking a detailed look at the qualitative results, we could see that the differences between users from the two different cultures were only found in structure logic, that is, whether the way of presenting information is chronological or non-chronological.

More specific explanation about qualitative results was indicated as follows.

The qualitative data mainly addressed four main aspects of the Minimalist manual: structure, writing style, visual design and error information. In the theoretical framework, four Minimalist principles are related to different aspects of the manual.

Firstly, the Minimalist principle one—choose an action-oriented approach—is reflected in two sub-aspects of the structure (content organization and structure logic) and one sub-aspect of visual design (visual content). Qualitative results revealed that there were apparent differences in structure logic between Western and Chinese groups, while no cultural differences were found in content organization and visual content.

As to the cultural difference in structure logic of the Minimalist manual, it could be explained by holistic and analytical thought patterns. The cognitive processes of East Asian people are characterized as holistic, while Westerners prefer an analytical approach (Nisbett et al., 2001). The variation in thinking patterns affects the way people perceive technical documents, which has been found in some previous studies. For example, a study reported that Chinese manuals favor chronological and inductive way of organizing information, while Western manuals are more businesslike and task-oriented (Barnum & Li, 2006). Similarly, another study found that the structures of Chinese science articles and user manuals are presented from basic to advanced and from familiar to unfamiliar, while Western technical manuals more underscore on individual tasks (Wang, 2000). In this empirical study, after reading and using the Minimalist manual, Chinese participants suggested readjusting the structure of the manual to make it more chronological, while their Western counterparts thought the current structure was logical and the most important content should be addressed first.

Unexpectedly, there were no differences related to the content organization. This could be due to two reasons. First, some Chinese participants said the device was for daily use and they only wanted to know its basic functions. Thus they were not motivated to learn more about the device itself. This was in accordance with the objective of learning of Chinese users reported by Honold (1999). Honold revealed that when using technical products, Chinese users are pragmatic and adopt a “quick and dirty” approach. And learning the basic functions in a quick manner is more important, while long-term learning is ignored. Second, Chinese participants, similar to their Western counterparts, mainly looked at the pictures when they performed tasks and many of them admitted they more opted for visual learning. Meanwhile, Chinese participants said they did not like lengthy manuals. Therefore, these may lead to Chinese people’s objection to including contextual information at the beginning of the Minimalist manual like Western participants.

Secondly, the Minimalist principle two—anchor the tool in the task domain— is relevant to structural organization element: headings. Qualitative results revealed that no cultural differences were found in headings. The possible reason was as follows. Similar to their western counterparts, Chinese participants indicated in the interviews that they regarded a user manual as a reference book. It meant that they only read the manual when they encountered some problems; when they bought a new product; or when the product they bought was complicated. This indicated that when using manuals, Chinese users had clear goals, that is, searching for information they need and then resolving problems. Hence, they need navigation elements. The Minimalist manual used in the

experiment did not provide search functions, so the headings served as the index for looking for information. That may make Chinese participants appreciate headings like their Western counterparts.

Thirdly, the Minimalist principle three—support error recognition and recovery—is related to one sub-aspect of structure (page design), one sub-division of writing style (terminology usage), two sub-aspects of visual design (text-graphic relationship and visual type preference for real/cartoon pictures) and the location of error information. Qualitative results revealed that no cultural differences were found in the dimensions mentioned above.

For page design, the manual involved in the experiment was designed according to Minimalist principles, so it was clean and clear, which was also reflected in interviewees' feedback. There were even three Chinese users complaining that the page design of the manual was a bit boring, which contradicted with previous studies (Wang, 2000; Barnum & Li, 2006). But the study by Barnum and Li drew the conclusion that Chinese manuals lack page design elements from analysis of Chinese technical documents designed for officials and decision-makers, which was different from the Minimalist manual designed for consumers in this empirical study. Likewise, the study by Wang included science magazines in her analysis. Therefore, the differences in types of technical documentation selected in the studies might lead to the contradiction.

For visual type, no cultural differences in preferences to real pictures or cartoon pictures may be related to Chinese people's tradition of learning (Honold, 1999). Honold reported that when using a technical product, Chinese people usually use basic functions and they learned these functions from imitating. In interviews, when talking about the disadvantages of cartoon pictures, most Chinese people said that they might be unclear and abstract, so it was hard to relate the cartoon pictures with real objects and real operations. However, the realism of real pictures was high, so they could follow the instructions shown in the real pictures. Therefore, the tradition of learning might be in relation to Chinese people's preference for real pictures.

Finally, the Minimalist principle four—support reading to do, study and locate— is relevant to one sub-aspect of writing style (direct/indirect writing style). Qualitative results revealed that no big cultural differences were found in this dimension, but part of Chinese participants' perception of the writing style of the Minimalist manual as cold echoed with a finding in the previous study.

The book *Intercultural Communication: A Discourse Approach* (R. Scollon and S.W. Scollon, 1995) mentioned that psychological studies found the amount of talk exerts an effect on people's feeling. More talk might be perceived as "warm", while less talk might be perceived as "cold". Here in this empirical study, Chinese participants' perception of the Minimalist manual as cold is, to some extent, in line with this finding. However, they did not view it as a bad thing.

In addition, no cultural differences in relation to the direct or indirect writing style might be related to the type of the product. During interviews, both Chinese and Western users held that the manual was direct and concise, and thus looked professional. In Chinese participants' view, the target group of this device was young people with a good taste of life. So the direct and professional writing style

fitted the image of the product. If the direct and professional writing style was transferred to the indirect style, such as informal or conversational style, the Chinese participants considered it would damage the image of the device as a quality product.

In conclusion, only quantitative results about attention and usability and qualitative results about structure logic showed that the Minimalist manual works better for Western users. Except that, no further cultural differences were found. In general, this may be related to the following two possible reasons.

The first reason is that there are no intercultural differences in technical documentation. If the results of this paper can be confirmed by subsequent studies, this study may imply that concerning the use of user manuals, cross-cultural differences are neutralized by "communities of practice" (Eckert, 2006). The notion of communities of practice "identifies a social grouping not in virtue of shared abstract characteristics (such as class, gender) or simple co-presence (such as neighborhood, workplace), but in virtue of shared practice" (p.683). This will be good news for companies, because they could save plenty of money and efforts. In this study, that means Minimalist manuals may also work for Chinese people. The translated Minimalist manuals may also fit Chinese people's preferences.

The second reason is about the participant's expectation of a user manual. An interesting observation found in the empirical study is that most participants perceive user manuals as a reference book. Specifically, in their view, the most important mission of a manual is to convey task-oriented information—how to use the device, which is completely contradictory to previous studies, which suggests that Chinese manuals are context-oriented (Ding, 2003; Wang, 2000). Therefore, they expect a clean and concise user manual, which only presents relevant information. In the empirical experiment, most participants emphasize that they only want to know how to use the device, and get the information they need quickly and efficiently. A user manual is a tool for them to get to know the device, so they do not appreciate the manual as a literary work in terms of structure, writing style, visual design, and so forth. As a result, almost all participants subconsciously vote for a manual, whose structure, writing style, visual design, and error information can optimize their searching and understanding of the information they need in the most effortless way.

5.2 Theoretical Implications

First of all, based on the main findings, we can indicate that Minimalist theory, which has been used in technical documentation design for more than 20 years, still seems to be a good approach. Because in general, Western participants show a positive attitude to the Minimalist manual. Both quantitative and qualitative results confirm that Minimalist principles are still valid and work for Western users.

Furthermore, Minimalist principles, developed on the basis of Western cultural preferences, are also positively evaluated by Chinese users. Although quantitative results show that the Minimalist manual works better for Westerners in terms of attention and perceived usability, a close look at qualitative results reveal that Minimalist principles are beneficial for Chinese users as well.

Last but not least, this study first proposes a framework to relate Minimalist principles with specific documentation elements. Further studies can be done. To be specific, four Minimalist principles are related to four main aspects of the manual with certain sub-aspects in brackets: structure (content organization, structure logic, headings and page design), writing style (direct/indirect writing style and terminology), visual design (visual content, text-graphic relationship and visual type preference for real/cartoon pictures) and error information (location of error information). As this is the first attempt, some other main aspects of the Minimalist manual may be neglected. Except for the mentioned four main aspects, some other sub-dimensions may not be included in this study as well. In future, researchers can try to explore more documentation elements of the Minimalist manual. Furthermore, the four main Minimalist principles also have several sub-principles. This study mainly examines cultural differences based on these four main Minimalist principles and does not go into the sub-principle level. Hence, future studies can investigate cross-cultural differences at the sub-principle level.

5.3 Practical Implications

This study offers practical implications for technical communication companies.

First, most previous findings of cultural differences fail to be confirmed in this study, so one point might be indicated is that there might be cultural differences in the practices of Chinese and Western technical communicators, but they may not be fully related to the preferences of end users (Li et al., 2015). Therefore, it might not be the best strategy to simply follow the suggestions presented in previous studies about cultural differences between Chinese and Western technical documentation in terms of structure, writing style, visual design and error information.

Second, although the quantitative results of the experiment demonstrate that the Minimalist manual works better for Western users in attention and usability, an in-depth analysis of qualitative data reveals that almost no intercultural differences are found except for one small aspect (structure logic) and thus the minimalist manual also works for Chinese users. Hence, if western companies which plan to create technical documentation of articles of everyday use for Chinese users and meanwhile just have limited budgets, they can design the structure, writing style, visual design and error information of the manuals based on Minimalist principles. If their source manuals are designed by Minimalist principles, they could translate their original manuals directly.

However, since the quantitative results of the empirical study show that the Minimalist manual is more beneficial for Western users, this to some extent indicates that the users have better perception when they read a manual designed with their cultural preferences. Therefore, for companies which have sufficient budgets for documentation creation, the best policy is to design user manuals according to specific products, specific user scenarios, and specific cultural preferences, and then carry out a usability test among target groups to collect and analyze feedback.

5.4 Limitation and Future Research

There are three limitations in this study, which provide potential opportunities for future research.

First is the selection of Chinese participants. They are all students of University of Twente and have stayed in the Netherlands for at least nine months. Besides, most of them took the IELTS test. Therefore, they might know more about Western culture than those Chinese people who have never been to Western countries. In future research, Chinese people who stay in mainland China and never go aboard could be recruited.

Second, the device used in the empirical experiment is for daily use and a bit simple, which leads to two limitations. For one thing, although participants were asked to do hands-on tasks, the results of task performance cannot be measured. For another, some participants could finish some tasks even without reading the manuals. Hence, in order to encourage participants to read more about the manual, two knowledge tests are added. However, the written tests are different from the real user scenarios. So in further study, a more complicated device than the one used in this study can be applied. As a result, users' task performance can be calculated and users may refer to manuals more often.

Third, statistics result show that there is a significant difference in age between Chinese and Western group. Chinese participants are 1.5 years older than Western group. It's hard to say whether the differences in the age influence the interpretation of the results. In further studies, the age of the participants could be controlled.

5.5 Conclusion

Previous studies have shown that there are some cultural differences in terms of structure, writing style, visual design and error information between Chinese and Western technical documentation.

This study conducted an empirical experiment to find the differences between Chinese and Western users when they use a Minimalist manual that reflects the preferences of Western culture with respect to structure, writing style, visual design and error information.

The study showed that the only cultural difference is found in attention, usability and the structure logic of the Minimalist manual. Except that, no cultural differences were found in other aspects.

To summarize, the study indicates that the influences of culture in technical documentation is overrated and the user manual designed in accordance with Minimalist principles to some extent also works for Chinese users in certain aspects of structure, writing style, visual design and error information.

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Appendixes

Appendix 1: Coding Tables

Table 9

Structure and Content of Minimalist Manual

Code	Definition	English group Segments /Interviewees	Chinese group Segments /Interviewees	Sample Quotations
Structure: attitude to contextual information-	In this manual, most contents are related to how to use the device, like shaving, epilating, and so on. If other information types, like advantages of using the device, the mechanism behind the device, are added in this manual, the users think it is unnecessary and they will not read it.	22/20	23/18	Emm… I think that will be too detailed. I don't think that is necessary for like the average users to know. Maybe if you enter biology or technology, like you have, I don't know, interest in it. Then it's good. But I think average users just want to know how to use it, how to take care of it, how to store it. So I don't think it's necessary. (Female, Non-technical, English)
Structure: attitude to contextual information-_reason: functionality	Users think it is not good to add contextual information, like advantages of using the device, the mechanism behind the device, and so on, because they just want to know how to use the device.	12/11	11/10	I think that that information would have been skipped by ninety-nine percent of all users. I want to know how to use the machine, and they don't have to know what the advantages are of this machine as they already purchased it and technical information, as what kind of motor is in a machine or how fast it will charge. Think they all don't wanna know it, or already looked it up before purchasing it. So that would be definitely redundant info in a manual, in my opinion. (Male, Non-technical, English)
Structure: attitude to contextual information-_reason: unnecessary	Users think it is not good to add contextual information, like advantages of using the device, the mechanism	0/0	7/6	In my view, information about the advantages of the device should be known before you buy this product. Therefore, it's unnecessary to present this kind of information in user manual.

	behind the device, and so on, because they think they are unnecessary information.			(Female, Non-technical, Chinese)
Structure: attitude to contextual information-_reason: uninterested	Users think it is not good to add contextual information, like advantages of using the device, the mechanism behind the device, and so on, because they are not interested in this kind of information.	3/3	2/2	I think I am would not need for sure some technical device, because I am not interested in technical things. (Female, Non-technical, English)
Structure: attitude to contextual information-_reason: too much	Users think it is not good to add contextual information, like advantages of using the device, the mechanism behind the device, and so on, because they think there will be too much information at the beginning.	2/2	0/0	Actually I think that may be a little bit overwhelming, at the moment I like it, because I slowly get to know what all these components are. I am afraid that if you put a huge amount information in the beginning. It will be a bit overwhelming. (Male, Technical, English)
Structure: attitude to contextual information-_solution: location	Users think it is not good to add contextual information, like advantages of using the device, the mechanism behind the device, and so on. But they provide suggestions to add this information into the manual in a more acceptable way.	6/6	8/7	You could do that in the buttons here on the bottom, if you want to know say all the parts, maybe here you can display the technical information. (Male, Technical, English)
Structure: attitude to contextual information+	In this manual, most contents are related to how to use the device, like shaving, epilating, and so on. If other information types, like advantages of using the device, the mechanism behind the device, are added in this manual, the users think in	7/7	17/13	G: For me, I would like to know a bit of a technical aspect. X: Why? G: Because I study engineering so I like to know how things work but it's very personal. (Male, Technical, English)

	some case it is necessary.			
Structure: attitude to contextual information+_reason: safety	Users agree to add some contextual information about safety to the user manual.	3/3	7/6	Maybe some want to know how it will on your skin, if it damages anything. I think that's important to know beforehand. (Female, Technical, English)
Structure: logical +	Users think the structure of this manual is logical.	16/14	14/12	The information for getting started is at the top, emm…the information about the maintenance and cleaning part is at the end. I said it's good in terms of actions. (Male, Technical, English)
Structure: logical -	Users think the structure of the manual needs some adjustment. The sequence of different topics should be rearranged.	3/2	14/9	Um, maybe the order is as bit…, like an attaching caps could be before epilating, shave and massage. (Male, Technical, English)
Structure: logical -_reason: non-chronological	Users think the structure of the manual needs some adjustment. The sequence of different topics should be rearranged, because it is non-chronological.	2/1	6/4	Secondly, the sequence of different parts in the manual is a bit weird. In my view, "Change & Replace parts" should be put after "Getting Started", then "Attach caps & combs", and then specific functions, such as epilate, shave, massage, etc.(Female, Non-technical, Chinese)
Structure: logical -_reason: unconnected	Users think the structure of the manual needs some adjustment. Because they think different parts in the manual looks unconnected.	1/1	7/5	In my view, "Attach caps & combs" can be integrated with specific functions, such as epilate, shave, massage, etc. Because caps and combs are related to those functions. If you put "Attach caps & combs" in a separate chapter, it makes me feel the user manual is not so integrated. (Female, Non-technical, Chinese)
Structure: headings+	Users think the structure of this manual is good, since it has different subsections (headings, chapters, index, table of content, and so on.)	34/22	26/15	I think the biggest advantage is that you have a clear overview of the different parts you have. Also if you know "ok, I want to see something at the epilating", then you click it and you find exactly which part, so that's quite nice. (Female, Non-technical, English)
Structure:	Users think the structure	27/21	15/11	The subdivision or parts, like

headings+_reason: well-organized	of this manual is good, since it has different subsections (headings, chapters, index, table of content, and so on.) Because they find the manual is well-organized by having headings.			epilating, shaving, so if you need something or want to use one of the heads, you could just go to that section. So it's helpful and well-organized. (Male, Technical, English)
Structure: headings-_reason: too much hierarchy	The manual has several hierarchies, like topics-subtopic, you need to click several times before you see the content you need.	2/2	3/2	But I said before, it's too many steps. So you have to open the big topic, then you get five under topics. (Female, Non-technical, English)
Page design: attitude+	Users think the page design of the manual is good and they like it.	23/18	18/17	Yeah, that's very clean. For me in a manual, I don't need extra stuff like colors or something, because the manual is something like I need to know something and I want to find it quickly, so for me keeping it clean is a good thing. (Female, Technical, English)
Page design: attitude-	Users think the page design of the manual is not so good.	1/1	13/8	…but only this thing, you have white text on white background and you can't read it. So I would change that. (Male, Technical, English)
Page design: unobvious icons	The icons for warnings, tips, alternative methods and fix at the bottom of the manual are not clear to users. They do not notice that there is extra information in these icons.	16/23	30/21	Yeah the buttons, the light bulb and the explanation were a little bit unclear what they were. I am not sure. I didn't find the buttons at first. (Male, Technical, English)
Page design: unobvious icons_solution: giving hints	The icons for warnings, tips, alternative methods and fix at the bottom of the manual are not clear to users. They do not notice that there is extra information in these icons. Users give suggestions to improve it, like giving hints at the beginning.	14/10	20/16	So maybe it should be pulled out at the beginning, pay attention to the icons. There are safety and other conditions. (Female, Non-technical, English)
Page design: unobvious	The icons for warnings, tips, alternative methods	7/6	21/17	Sometimes, the things with light for instance, I think it's nice to know that

icons_solution: placing in the normal manual	and fix at the bottom of the manual are not clear to users. They do not notice that there is extra information in these icons. Users hope this information can be placed in the normal text.			charging 15 or 45 minutes or something. I think it should be in this text (normal manual) and not here. (Male, Technical, English)
Content amount: complete content	Users think the manual covers everything.	25/22	27/17	I would say it has the right content. It seems it has all the information you need. So all the actions you can do with things they are all listed, for example using it in a specific way, cleaning it or storing it. It seems to be organized in terms of actions. That's pretty clear. (Male, Technical, English)
Content amount: incomplete content	Users think some information is missing.	5/4	5/3	It sometimes misses some parts (detachment of massage head), because sometimes you need to detach some parts and that was not clear for the manual. (Male, Technical, English)
Content amount: too much information-	Users think there is too much information in the manual, which exerts a negative effect on their use of the manual.	6/5	8/6	I think the manual is good, at least like this. I don't think it misses any information, but it contents a lot of information, so maybe there are some parts can be taken out. (Female, Non-technical, English)
Content amount: too much information+	Users find there is too much information in the manual, but they do not think is a disadvantage.	3/2	0/0	But I think when I use this product, you know I want to epilate my legs, and I just go to that button, that is super easy. So actually that maybe not disadvantage, because if you want to use the product, you use one type of the function, you just click on that, you don't need to look at anything else. So for me even though there is a lot of information, it's not a disadvantage. (Female, Non-technical, English)
Content: repetition+	Users think there is repeated information in	5/4	1/1	I don't know. Well, it depends on how people use it. If you just want to use one part, well, then it's fine to have all

	the manual, but they do not think it is a bad thing.			the things. (Male, Technical, English)
Content: repetition-	Users think there is repeated information in the manual, and they do not like it.	11/9	13/11	Then there are some steps repeat all the time, like “please check the head”, these things are repeated. You just go through it and don’t read anymore. If there is something new, you wouldn’t understand it, because you don’t read it. (Female, Non-technical, English)

Table 10

Writing Style of Minimalist Manual

Code	Definition	English group Segments /Interviewees	Chinese group Segments /Interviewees	Sample Quotations
Writing style: short +	The manual is short and concise.	29/20	31/24	I think is fine. It’s direct and short. It just explains what you need to do. If I read a manual, I want that, I don’t need the whole story about everything. (Male, Technical, English)
Writing style: short +_reason: to the point	Users think that the short sentences in the manual provide them with enough information, because those sentences are to the point.	13/12	20/15	It’s good. Just what you have to do, is just give you instructions, that is what you need, right? (Female, Non-technical, English)
Writing style: short +_reason: additional information	Users think that the short sentences in the manual provide them with enough information, because there is additional information provided in icons, pictures, and so on.	5/5	3/3	I think because most steps are explained in pictures. So it’s like for example, you see the shaving head in the picture, and the text read “checking if the shaving head is mounted on the Satinelle”. And you will like, “yeah, ok”. (Female, Non-technical, English)
Writing style: short +_reason: simple product	Users think that the short sentences in the manual provide them with enough information, because the product is not	0/0	3/3	Because the device itself is not complicated. (Male, Technical, Chinese)

	complicated.			
Writing style: direct	If the manual is personified, the image of the person is direct. Or the writing style of the manual is direct.	16/12	13/11	I think the writing style is pretty simple, but to the point. I mean, first step is basically naming what function you're about to look into the manual for, unless you have to check if the part is there and then how to mounted on a machine or how to use it. I think the writing style is pretty good. (Male, Non-technical, English)
Writing style: simple	The manual is easy to understand.	10/8	6/5	Really easy. You know, basically. It's good and understandable. (Male, Technical, English)
Writing style: professional	If the manual is personified, the image of the person is professional. Or the writing style of the manual is professional.	14/13	12/12	I think for the manual like this I would prefer a professional. For the magazine or something like that may fit that style (conversational). But for a manual or an app like this I would prefer this writing style. (Female, Non-technical, English)
Writing style: cold	If the manual is personified, the image of the person is emotionless.	3/3	12/12	The person must always know what to do, always have answers ready, but the person without emotion. (Female, Non-technical, English)
Writing style: polite	If the manual is personified, the image of the person is polite.	2/2	2/2	She may be polite. (Female, Non-technical, English)
Writing style: conversational or humorous writing style-	Users think the conversational or humorous writing style is not good.	18/17	19/19	But I think if you have someone that is very serious, or maybe someone that's trying to get it to work, and it doesn't work. Then you don't want to see the jokes. (Male, Technical, English)
Writing style: conversational or humorous writing style-_reason: functionality	Users think the conversational or humorous writing style is not good, because they just want to know how to use the device.	15/15	11/11	Because I am not having a conversation with the manual. Manual should tell me how to do stuff and what to do. And with the person, I would have a conversation as I can also ask questions or ask for more information or for an explanation if I

				don't understand something, but a manual that's not conversation. That's just one-way information. (Male, Non-technical, English)
Writing style: conversational or humorous writing style-_reason: diverse	Users think the conversational or humorous writing style is not good, because they think the current writing style of the manual fit for more users.	1/1	0/0	On the other way, I think if you want this manual used by multiple people, who are more different. It's easier to make it clean than to make it too soft in the way. Because the target group will be smaller. (Female, Non-technical, English)
Writing style: conversational or humorous writing style +	Users think the conversational or humorous writing style is good	4/4	3/3	I think if you put more humor in it, in general I would like more, maybe some joke, some funny pictures, instead of shaving a person, you can shave an…, I don't what, elephant or something, would be nice. That's funny. Maybe there more jokes. (Male, Technical, English)
Writing style: conversational or humorous writing style +_reason: interesting	Users think the conversational or humorous writing style is good, because they think the manual will be more interesting.	2/2	2/2	I think if you put more humor in it, in general I would like more, maybe some joke, some funny pictures, instead of shaving a person, you can shave an…, I don't what, elephant or something, would be nice. That's funny. Maybe there more jokes. That's good. (Male, Technical, English)
Writing style: conversational or humorous writing style +_reason: personal	Users think the conversational or humorous writing style is good, because they think the manual will be more personal.	2/2	1/1	Yeah, it could be more personal, because you are using for personal use. So if a person is given an explanation to use the device in a personal way. I think it might be good to reflect your... (Female, Non-technical, English)
Writing style: emotional writing style-	Users think the emotional writing style is not good	18/16	17/17	I don't think that is necessary for a manual, because for a manual you just want to know what to do. You want to get information quickly and effectively. If you want entrainment, you read a story book. So a person like me, whenever I do something, I just want to know how to do it and get over with it.

				(Female, Non-technical, English)
Writing style: emotional writing style-_reason: functionality	Users think the emotional writing style is not good, because they just want to get the information they need quickly and know how to use the device.	9/7	7/7	Um, I think that if a manual would start every page with dear user, please do this or have you tried…? I think that will be too much unnecessary words for me. Um, because as I said, for me, a manual should be short, concise, and clear about the task. I'm looking up, so in case of using the razer function, the shaving function, I just want the information about the shaving function and all the friendly words that just unnecessary for me. (Male, Non-technical, English)
Writing style: emotional writing style-_reason: not fit	Users think the emotional writing style is not good, because the writing style does not fit the current template.	0/0	4/4	It would work, but not with this template. This template is very standard here. Uh, pretty much less with the little icons and very simple sentence. So I think that kind of writing of being friendly and helpful wouldn't fit. (Male, Technical, English)
Writing style: emotional writing style-_reason: unconnected	Users think the emotional writing style is not good, because it is hard for them to have an emotional connection with a manual.	3/3	1/1	Emm… maybe for some people, they will really feel that they are friends with the manual, I don't know maybe personal system behind it. But for me, I don't feel very emotional connection I have to say. Just technical for me, I don't know. There is not a person/real person behind it, just a system. So for me, I will not think that's emotional relationship, or deep relationship. (Female, Non-technical, English)
Writing style: emotional writing style-_reason: uninterested	Users think the emotional writing style is not good, because they show no interest in it.	2/2	1/1	Emm... I don't know. I think for some people, it might be different. For me, it doesn't really matter. Because I am not the person that reflects on the manual to see how a device works. It's more for me like as a reference method, ok I got a piece here what it's useful. I just use the manual to search for it. And then it doesn't matter to me like a formal or informal way, just a

				statement or description. (Female, Non-technical, English)
Writing style: emotional writing style+	Users think the emotional writing style is good.	5/5	2/2	M: That's very good. X: Why? M: Because I like friends. Of course, it's better to have a friend to explain something to you than someone you just met. That's in hurry maybe. I think it's really good to stick very close to the person. (Male, Technical, English)
Writing style: emotional writing style+_reason: personal	Users think the emotional writing style is good. Because it is more humane and makes users incline to the manual.	4/4	1/1	B: Yeah, I like this. X: Why? B: Um, It makes you feel happy. And uh, it's friendly. And I don't know, maybe more inclined to use the manual to do stuff. (Male, Technical, English)
Terminology: no difficult terms	Users do not find any difficult terms in the manual. They think the terms used in the manual are easy to understand.	16/16	22/22	No, I think for me that's ok. (Female, Non-technical, English)
Terminology: have difficult terms	Users find there are some terms are not easy to understand.	7/6	6/4	Well, I can get a bit confusing between epilating and shave, and between cap and head because I think there are a massage cap and a massage head. Besides that, it's fine. (Male, Technical, English)
Terminology: difficult technical terms-	Users think it is not good to include difficult technical terms in the manual.	16/15	19/19	Ok, more terms people unfamiliar with? I don't think that will be too smart, because people won't be able to understand what you refer to, if they don' understand the terms. (Female, Non-technical, English)
Terminology: difficult technical terms-_reason: hard to understand	Users think it's not good to include difficult technical terms in the manual, because it is hard for them to understand.	9/8	11/11	It's will be hard for me. I really have to concentrate on it if I have to try it out. Then I maybe stop using this manual. (Female, Non-technical, English)

Terminology: difficult technical terms-_reason: functionality	Users think it is not good to include difficult technical terms in the manual, because they do not serve the purpose for users.	2/2	2/2	A: I don't think that serves the purpose for users who use this manual. So I think the way it is written now is more useful for the users. (Male, Technical, English)
Terminology: difficult technical terms-_reason: unnecessary	Users think it is not good to include difficult technical terms in the manual, because it is unnecessary.	0/0	3/3	The user manual's target users are average people, so it's not necessary to add difficult terms. (Male, Technical, Chinese)
Terminology: difficult technical terms+	Users think including difficult technical terms in the manual is fine for them.	3/3	0/0	R: It will be fine for me. If it will be the first time you would normally find how it works, it will be more explained. Once you know what it means, you can use that word often. That will be fine for me. (Male, Technical, English)

Table 11

Visual Design of Minimalist Manual

Code	Definition	English group Segments /Interviewees	Chinese group Segments /Interviewees	Sample Quotations
Visual design: attitude +	Users like pictures in the manual	32/22	33/22	I think it's good. I like the pictures. Pictures are always nice. So I think I would say together with beauties… those topics are very good with pictures with beauties. (Female, Non-technical, English)
Visual design: attitude +_reason: action-oriented	Users like pictures in the manual, because they just show how to do.	7/7	7/7	C: Pretty clear, straight to the point. Just simple. And that's all you need, in my opinion. (Male, Non-technical, English)
Visual design: attitude -	Users think the use of pictures in the manual is not so good.	6/6	9/7	Because it's white with black text and grey background. I think it's as simple as you can make it. But anyway that's good to be very simple, so I am not sure which will be nicer. I think there are couples of things as humors for

				instance, think of Google, if you don't have an internet connection, it just starts with games for you, which jump off over there. There are some jokes for GitHub or something. If you don't have a connection, they will give your funny text. I don't expect here. It's very standard and default. (Male, Technical, English)
Visual design: close connected and redundant text-graphic relationship+	The text and the pictures convey almost the same information, and users like this kind of design.	19/16	16/14	Ya, I think the text doesn't provide more information. That's in the picture. You don't need both. But I think it is better to have both. Maybe one person more reading, one person may be more watching. Then you will provide for everyone's favorite style of…I don't know…recognize or something. (Female, Non-technical, English)
Visual design: close connected and redundant text-graphic relationship+_reason: more information	The text and the pictures convey almost the same information, and users like this kind of design. Because they think if they only look at pictures and do not get enough information, they can refer to texts for more information, and vice versa.	5/5	0/0	Well, actually it's pretty right underneath the picture itself. I think is more like when I browse through the manual myself, I look at the pictures to see what I need to do. If I don't understand the pictures I will read the text underneath. Therefore, it's good the text underneath is short. Just an extra information, so the picture you see. (Female, Non-technical, English)
Visual design: close connected and redundant text-graphic relationship+_reason: confirmation	The text and the pictures convey almost the same information. Users like this kind of design, because there will be a double check and so they know they get the right information.	6/6	6/6	Good, because if you look at the picture, you don't get it, then you look at the text. It's double, but I think it's good. Because look at the picture, emm…what it is, what does this cap call. Maybe you need to know the name, then I would look at the text. I expect that to be there. (Male, Technical, English)
Visual design: close connected and redundant text-graphic relationship+_reason: easy	The text and the pictures convey almost the same information. Users like this kind of design. Because they think it is	1/1	1/1	It's good. It's very well related. It does exactly what the text says. That makes also easier to look at the picture, or you have to read the text, word, word, word, word. (Male, Technical,

	easy to understand.			English)
Visual design: close connected and redundant text-graphic relationship+_reason: diverse	The text and the pictures convey almost the same information. Users like this kind of design. Because they think it will have a large target group.	2/2	1/1	Ya, I think the text doesn't provide more information. That's in the picture. You don't need both. But I think it is better to have both. Maybe one person more reading, one person may be more watching. Then you will provide for everyone's favorite style of…I don't know…recognize or something. (Female, Non-technical, English)
Visual design: close connected and redundant text-graphic relationship-	The text and the pictures convey almost the same information, and users do not think it is necessary.	2/2	0/0	Yeah, complementary to each other. But I don't know if it's necessary in all cases. (Male, Technical, English)
Visual design: more information in the text-	Users think that if more information is added to the text, it is not good.	15/15	13/13	I don't think there is more information and I think also it will be too long. (Female, Non-technical, English)
Visual design: more information in the text-_reason: functionality	Users think that if more information is added to the text, it is not good. Because they think the current manual already provides enough information and they have got the information they need.	6/6	5/5	Because this is already very good. And I already got what to do from this, why will you add more information. And I think oh I have to read that information, and then I read it. Then I would think oh, could I just look at the picture, I don't need to look at the information. So will get me annoying at the end. (Female, Non-technical, English)
Visual design: more information in the text+	Users think that if more information is added to the text, it is good.	4/3	2/2	C: If you will add additional information, I wouldn't add in a photo. I would definitely add it in the text. X: Why? C: Because the photo or an image without text means that the image should be clear. And then you want to make sure that the image only focuses on only one task. So if you want to use additional info, I wouldn't put it in a photo itself, as that will probably make the image less clear. (Male, Non-technical, English)
Visual design: more	Users think that if more	10/10	6/6	No, that will just make more

information in pictures-	information is added to the picture, it is not good.			confusing. (Male, Technical, English)
Visual design: more information in the pictures-_reason: messy	Users think that if more information is added to the picture, it is not good. Because it is messy.	3/3	1/1	M: No, I wouldn't do that. X: why? M: It would make it messier. (Male, Technical, English)
Visual design: more information in pictures+	Users think that if more information is added to the picture, it is good.	1/1	7/7	I think it's nice. Because you can put the arrows in the picture. That's maybe nice and make to the point. (Male, Non-technical, English)
Visual design: pay more attention to pictures	When users perform tasks with the help of the manual, they mainly look at the pictures.	19/18	17/17	I think I first look at the picture and try only look at the picture. If I didn't make it by only watching the picture, then I read the text. But first only picture, because it's easier or faster. If I didn't get it, I will read the subtitle. (Female, Non-technical, English)
Visual design: pay more attention to pictures_reason: easy	When users perform tasks with the help of the manual, they mainly look at the pictures. Because they think looking at pictures is easier.	7/7	7/7	I think I first look at the picture and try only look at the picture. If I didn't make it by only watching the picture, then I read the text. But first only picture, because it's easier or faster. If I didn't get it, I will read subtitle. (Female, Non-technical, English)
Visual design: pay more attention to pictures_reason: more information	When users perform tasks with the help of the manual, they mainly look at the pictures. Because they think they can get more information from the pictures.	5/5	6/6	Because it says a lot more than text. It helps you save the time if you just look at the picture. I could also read it if it is not clear. (Male, Technical, English)
Visual design: pay more attention to pictures_reason: quicker	When users perform tasks with the help of the manual, they mainly look at the pictures. Because they think looking at pictures is quicker.	3/3	2/2	Because a picture is quicker for me. I know what to do. (Female, Non-technical, English)
Visual design: pay more attention to texts	When users perform tasks with the help of the manual, they mainly look at the texts.	3/2	7/7	C: Um, I pay more attention to the text. X: Why?

				C：Because that's where I expect to get the most information from. (Male, Non-technical, English)
Visual design: the necessity of text+	Users think that if there are only pictures in the manual, it is not so good. Because texts are still necessary in their view.	18/16	20/20	I think it will be too less. Because I think you can ever use little sentences, or maybe a few words or arrows on it. But sometimes like “put it down until you hear click”, you could not have a picture to have a sound to make click. So for some pictures, it’s better to have some sentences. (Female, Non-technical, English)
Visual design: the necessity of text+_confirmation	Users think that if there are only pictures in the manual, it is not so good. Because texts are still needed to provide double check.	13/13	1/1	Because the thing is I first look at the picture, if I don’t understand the picture, I will look at the text. If the text is not there, then I don’t know what to do. (Female, Non-technical, English)
Visual design: the necessity of text+_more information	Users think that if there are only pictures in the manual, it is not so good. Because texts are still needed to provide more information.	2/2	12/11	I think it will be too less. Because I think you can ever use little sentences, or maybe a few words or arrows on it. But sometimes like “put it down until you hear click”, you could not have a picture to have a sound to make click. So for some pictures, it’s better to have some sentences. (Female, Non-technical, English)
Visual design: the necessity of text-	Users think that if there are only pictures in the manual, it is ok.	8/6	5/5	It would also still be possible in most case. (Male, Technical, English)
Visual design: the necessity of text-_unnecessary	Users think that if there is only pictures in the manual, it is ok. Because they hold that texts are unnecessary.	3/3	0/0	But for example, there is a picture, women click the button. There you don’t need the subtitle. (Female, Non-technical, English)
Visual design: real picture +	Users like real pictures used in the manual.	17/17	17/17	I think the real person and the real device is nice. Because you said the text is very direct and not very emotional, so you can add personal touch into it. (Female, Non-technical, English)
Visual design: real picture +_reason: more understandable	Users like real pictures used in the manual, because it is easier for	11/11	13/13	I know, you mean, Emm, I think the real life pictures are better, because it reflects the situation in real life. If you

	users to get the information.			wanna use the device, you are struggling with something, like changing the piece for example. I think you would understand the changing operation faster maybe, if it's in real life. For cartoon, well it doesn't really reflect the situation in real life, so it might be different. (Female, Non-technical, English)
Visual design: real picture +_reason: personal	Users like real pictures used in the manual, because they look more personal.	5/5	0/0	I think the real person and the real device is nice. Because you said the text is very direct and not very emotional, so you can add personal touch into it. (Female, Non-technical, English)

Table 12

Error information of Minimalist Manual

Code	Definition	English group Segments /Interviewees	Chinese group Segments /Interviewees	Sample Quotations
Error information: on-the-sport error information+	Users think it is good to place warnings, tips, alternative methods and fixes information under each step.	17/17	18/17	Because it's relevant for the step, so you have to find it in the step not somewhere else. (Male, Technical, English)
Error information: on-the-sport error information+_reason: accessible	Users think it is good to place warnings, tips, alternative methods and fixes information under each step. Because this information will be more accessible.	10/10	6/6	I think it's good. Because it's in chronological order, so it's in sequent. You just need to follow everything. (Female, Non-technical, English)
Error information: on-the-sport error information+_reason: clear	Users think it is good to place warnings, tips, alternative methods and fixes information under each step. Because they think this kind of design it is clear.	1/1	0/0	I think that's good. It's good to have different information in different steps. So it's clear. (Female, Non-technical, English)

Error information: on-the-sport error information+_reason: relevant	Users think it is good to place warnings, tips, alternative methods and fixes information under each step. Because this information should be closely related to the steps.	2/2	6/6	Because it's relevant for the step, so you have to find it in the step not somewhere else. (Male, Technical, English)
Error information: on-the-sport error information-	Users think it is not good to place warnings, tips, alternative methods and fixes information under each step.	3/3	0/0	It makes it a little bit difficult. Because I have to search the step, and then I see the warning. Maybe you have the whole about shaving body, they can say here this is what you be aware of this. (Male, Technical, English)
Error information: separate error information-	Users think it is not good to place error information in a separate chapter.	15/15	14/14	No, I would probably not look at there. Because it's really messy. Something is wrong with massage cap, I would look at the massage cap, and maybe see there if something goes wrong. Otherwise, I have to really look for it. (Male, Technical, English)
Error information: separate error information-_reason: inconvenient	Users think it is not good to place error information in a separate chapter. Because it is inconvenient for users to get the information they need.	13/13	8/8	No, I would probably not look at there. Because it's really messy. Something is wrong with massage cap, I would look at the massage cap, and maybe see there if something goes wrong. Otherwise, I have to really look for it. (Male, Technical, English)
Error information: separate error information-_reason: unclear	Users think it is not good to place error information in a separate chapter. Because it is not clear to the users.	0/0	4/4	Compared to the current design, putting error information in a separate chapter will be a bit messy and unclear. (Male, Technical, Chinese)
Error information: separate error information-_reason: too much	Users think it is not good to place error information in a separate chapter. Because it looks overwhelming.	3/3	0/0	Emm…I think that will be too much, because I have every chapter again, like epilating, shaving, massage. (Male, Technical, English)
Error information: separate error information+	Users think it is good to place error information in a separate chapter.	8/7	5/5	I think that will be good. As I said, you don't need that information right at the moment. So I think it's more for extra, if you stuck for something. I think it's good to have an additional option if you got stuck or want to have more

				information, you can go to this page. (Female, Non-technical, English)
Error information: separate error information+_reason: convenient	Users support to place error information in a separate chapter. Because they think it will be more convenient for them to read it.	4/4	3/3	I think it will be nice. Then all the warnings are in one list. Maybe I will read it. (Female, Technical, English)
Error information: separate error information+_reason: uninterested	Users support to place error information in a separate chapter. Because they think they will not look at it and the location of this kind of information makes no difference to them.	1/1	0/0	I am… Emm…you know I don't think I will look at those icons. Maybe only if I am a loyal user to this product. X: So that's means for you, you have fewer chances to read those icons, so whether it's placed under each step or separated part, it makes no difference to you. V: yes (Female, Non-technical, English)
Error information: separate error information+_reason: additional	Users support to place error information in a separate chapter. Because they think this information is additional and is not needed right at the moment.	1/1	0/0	I think that will be good. As I said, you don't need that information right at the moment. So I think it's more for extra, if you stuck for something. I think it's good to have an additional option if you got stuck or want to have more information, you can go to this page. (Female, Non-technical, English)

Appendix 2: Interview Questions

- **Could you list three advantages of this manual?**
- **Could you list three negative aspects of this manual?**

Part 1. Content

What do you think of this manual's content?

1) Is the information enough for you? Do you want more information? Or do you think there is information you do not need? Or the manual is good and doesn't need any changes?
2) Could you specify the information you want to add or delete?
3) Why do you want to add/delete the information? Or why you think the manual is good enough and do not need modification?

(If people fail to get to the point, the following questions will be asked)

4) As we can see, the whole manual focuses on tasks and action information, is that enough for you? Why?
   As we can see, in this manual, most information is about operations, like how to shave, how to massage, and so on. This kind of information allows you and other users to know how to do a performance, right? Actually, in this manual, 90% information is about actions, performance, so do you think that information are enough for you?
5) Do you want other information except for the action information? What kind of information? Why?
6) If there is information like an introduction of the device (e.g. the benefits/advantages of the device), the mechanism behind the device or technical information is provided, how do you think of that?
7) Do you want to add this information into the current manual? Why or why not?
8) When introducing a new device, two ways of information presentation are used. Firstly, give you as much knowledge about the device as possible, let you have a comprehensive understanding of the device; secondly, give you action information immediately and just learn to perform tasks? What do you think of these two ways of information presentation?
9) Which way do you think is more suitable for you? Why?
10) As to the manual, what's the ideal content you expect?

Part 2. Structure

What do you think of this manual's structure?

In this experiment, the structure refers to the content organization.

1) When you do the knowledge test, or perform the task, how you find/locate the information you want?
2) Which kind of ways of the content organization is helpful for you?
3) Could you list two or three ways that you think is helpful?
4) which page design elements do you think are useful for you?

5) Could you list two or three page design elements that you think are useful for you to easier get the information you want, or complete the task? Why?

(If people fail to get to the point, the following questions will be asked)

6) Did you notice the additional information, like warnings, tips, alternative method, or fixes? What do you think about this information?
7) This information is presented with special icons. What do you think about them?
8) You see the manual has eight main tasks. These tasks are organized in a list. What do you think about them?
9) As to the manual, what's the ideal structure you expect?

Part 3. Style

What do you think of this manual's writing style?

1) We could see in a sentence level, how do you think of the manual's style? why?
2) Is this writing style the same with the style you see in other manual?
3) Do you have other preferred style?
4) Compared with the style you seen before, how do you think about the style of this manual? (Which one do you prefer?)
5) If the manual is personated as an assistant. What do you think of that? (Friendly, lovely, professional, authoritative?)
6) If the manual is written in a more conversational or humorous style, for example, "welcome to use the Philips product" or "let's explore the manual now", and so on, what do you think of that?
7) The next question is in some manuals, they will use very cute salutation to users, like dear, or something like that. It seems they are trying to build a relationship with you and let you indicate that "we are friends and let me help you". It is more emotional. What do you think of that kind of writing style?
8) As to the manual, which kind of style you most expect?

(If people fail to get to the point, the following questions will be asked)

9) Do you notice the length of sentences in this manual? How do you think of that?
10) Do these short sentences convey enough information to you? Do you want to add more information, or you think there is still something redundant you want to delete, or you do not want to do any changes to this manual?

What do you think of the use of terminology in this manual?

11) Do you find some terms are difficult to understand in this manual?

(If people fail to get to the point, the following questions will be asked)

12) Do you mind if there are technical terms occurring in the manual?

Part 4. Visual Design

What do you think of this manual's visual design?

1) When you perform a task, you mainly look at the text or the pictures? Why?
2) In what way, does this manual's visual design help you to complete the tasks?
3) How are these pictures related to corresponding text? How do you think about that?
4) If all texts in this manual are deleted, and just pictures are left. Do you like this kind of manual? Why?
5) If there are only pictures and no texts, do you think you could successfully complete the tasks? Why?
6) Comparing with the manual with both texts and pictures and the manual with only pictures. Which kind of manual do you prefer? Why?

(If people fail to get to the point, the following questions will be asked)

7) You can see the text information is identical to the pictures. That means texts and pictures provide the same information. What do you think of this kind of visual design? Why?
8) Do you think the information provided in the texts is enough for you?
9) Do you want to add extra information to the text? Why or why not?
10) As to the manual, what's the ideal visual design you expect?

Part 5. Error information

What do you think of this manual's information about possible errors?

1) I found that when you performed the task, you seldom read the error information, why?
2) How do you think of this information?
3) Did you pay attention to this information? Why?
4) Did you find it useful? Why?

(If people fail to get to the point, the following questions will be asked)

5) As you can see, the error information is placed in each step. What do you think of this kind of design?
6) Do you like it? Why or why not?
7) Do you think the error information placed in each step interrupt your reading of this manual? Why or why not?
8) Do you think there are better ways to put the error information?
9) Could you give some examples?
10) If the error information is put separately, how do you think of that?
11) Do you like separated error information, why or why not?
12) As to the manual, what's the ideal error information you expect?
13) How do you find ways to resolve a problem in your daily life?
14) Do you think the manuals could help you to resolve some problems? Why or why not?

General experience

1. Have you ever used the similar shaving device?
2. Could you tell your experience to use manuals in your daily life?
   1) What will you refer to when you encounter some problems?
   2) How would you resolve them when you encounter some problems?

3) When will you refer to a manual or other resources?
4) What will you read in a manual?
5) What is your attitude towards user manuals?
    1) Do you think is useful?
    2) Do you think is replaceable?
6) Do you have any suggestions to the user manuals?
7) How you access the user manual in your daily life?

3. Are they any user manuals leaving a deep impression on you? (in terms of content, structure, style, visual design, error information) Why?

Appendix 3: Knowledge Tests

Part 1: Please write down the names of following components of Satinelle Prestige BRE-650.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Part 2: Please fill in the following blanks.

1. When charging the Satinelle Prestige, after_____minutes the charge indicator flashes more slowly.

2. When charging the Satinelle Prestige, the charge indicator flashes_____, indicating that the batter is almost empty and needs to be charged.

3. When placing the Satinelle Prestige on your skin, you should make sure the Satinelle Prestige is placed a _____degree angle.

4. The integrated light goes on automatically to give a better view while using _____. If you want to switch off the integrated light, keep the on/off button pressed for____seconds when you switch on the appliance.

5. Store the Satinelle, its heads and accessories in the _____

6. When epilating your bikini area, you should place the epilating head_____onto the skin to epilate.

7. When cleaning the epilating head, hold the Satinelle Prestige_____under the tap.

8. When shaving your underarms, moving Satinelle over your skin too fast, you may not get a ____ result.

9. When epilating your bikini area, you should use the device on wet skin or with your_____ to achieve a less painful epilation.

10. When cleaning the epilating head, rinse with water that is not hotter than shower temperature (max.____degrees)

Appendix 4: IMMS Questionnaire

The Instructional Materials Motivation Survey (Keller, 2010, pp. 283–284)

Instructional Materials Motivation Survey

There are 35 statements in this questionnaire. Please think about each statement in relation to the manual you have just used and indicate how true it is. Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear.

Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

Record your responses on the answer sheet that is provided and follow any additional instructions that may be provided in regard to the answer sheet that is being used with this survey. Thank you.

Use the following values to indicate your response to each item.

1 (or A) = not true
2 (or B) = slightly true
3 (or C) = moderately true
4 (or D) = mostly true
5 (or E) = very true

01C011 When I first looked at this manual, I had the impression that it would be easy for me.

02A01 There was something interesting at the beginning of this manual that got my attention.

03C02 This manual was more difficult to understand than I would like for it to be.*

04C03 After reading some parts of this manual, I felt confident that I knew what I was supposed to learn from this manual.

05S01 Completing the tasks in this manual gave me a satisfying feeling of accomplishment.

06R01 It is clear to me how the content of this manual is related to things I already know.

07C04 Many of the pages had so much information that it was hard to pick out and remember the important points.*

08A02 The manual is eye catching.

09R02 There were pictures or texts that showed me how this manual could be useful to some people.

10R03 Following this manual completely was important to me.

11A03 The quality of the writing helped to hold my attention.

12A04 This manual is so abstract that it was hard to keep my attention on it.*

13C05 As I read this manual, I was confident that I could understand the content.

14S02 I enjoyed reading this manual so much that I would like to know more about this topic.

15A05 The pages of this manual look dry and unappealing.*

16R04 The content of this manual is relevant to my interests.

17A06 The way the information is arranged on the pages helped keep my attention.

18R05 There are explanations or examples of how people use the knowledge in this manual.

19C06 The tasks in this manual were too difficult.*

20A07 This manual has things that stimulated my curiosity.

21S03 I really enjoyed using this manual.

22A08 The amount of repetition in this manual caused me to get bored sometimes.*

23R06 The content and style of writing in this manual convey the impression that its content is worth knowing.

24A09 I learned some things that were surprising or unexpected.

25C07 After reading this manual for a while, I was confident that I would be able to complete the tasks.

26R07 This manual was not relevant to my needs because I already knew most of it.*

28A10 The variety of texts, illustrations, etc, helped keep my attention on the manual.

29A11 The style of writing is boring.*

30R08 I could relate to the content of this manual to things I have seen, done or thought about in my own life.

31A12 There are so many words on each page that it is irritating.

32S05 It felt good to successfully complete tasks in this manual.

33R09 The content of this manual will be useful to me.

34C08 I could not really understand quite a bit of the information in this manual.*

35C09 The good organization of the content helped me be confident that I would be able to use this manual.

36S06 It was a pleasure to use such a well-designed manual.

Appendix 5: SUS Questionnaire

The SUS contains ten items with five response options.

1	2	3	4	5
strongly disagree				strongly agree

1. I think that I would like to use this manual frequently.
2. I found this manual unnecessarily complex.
3. I thought this manual was easy to use.
4. I think that I would need the support of other people to be able to use this manual.
5. I found the various elements in this manual were well integrated.
6. I thought there was too much inconsistency in this manual.
7. I would imagine that most people would learn to use this manual very quickly.
8. I found this manual very cumbersome to use.
9. I felt very confident using this manual.
10. I needed to learn a lot of things before I could get going with this manual.