

Facebook User Interface Design to Suit the Saudi Arabian Culture

Hana Ghazy A. Almakky

Bournemouth University

A thesis submitted in partial fulfilment of the requirements for the degree
of Doctor of Philosophy

Faculty of Science and Technology

February 2017

Copyright

This copy of the thesis has been supplied on condition that anyone who consults it is understood to recognise that its copyright rests with its author and due acknowledgment must always be made of the use of any material contained in, or derived from, this thesis.

Acknowledgment

Undertaking this PhD has been a great experience for me and it would not have been possible to do without the support and design guidelines that I received from many people.

First, I would like to thank my first supervisor Dr Reza Sahandi and my second supervisor Dr. Jacqui Taylor for their valuable support that helped me accomplish this thesis.

I am also very grateful to all participants who took part in this study and helped me achieve the aim of this thesis.

Special recognition goes to my family, for their unremitting support during my PhD study. To my father Ghazy and mother Wafaa, thank you very much for believing in me and for your prayers and encouragements. Without you, I could never have reached this stage in my life. To my sisters Abeer and Rawa, and brothers, thank you for believing in me and being there for practical support in all aspects of life beyond doing a PhD.

To my husband Hamzah and my daughter Lara thank you for being a source of inspiration and continual support of my academic endeavours.

Author's declaration

I declare that the work in this thesis was carried out in accordance with the regulation of Bournemouth University. The work contained in this thesis is the result of my own investigations and has not been accepted nor concurrently submitted in candidature for any other award.

I declare that while registered as a candidate for the research degree, I have not been a registered candidate or enrolled student for another award of the university other academic or professional institution.

Abstract.

Culture affects the preferences of users and their expectations of the elements found in the user interfaces of programs. This study investigates the influence of culture, as well as the specific experience and expectations of Saudi Arabian users, with respect to the design of the user interface of the Arabic version of Facebook. As the Arabic version of Facebook has issues with the engagement of users, this research therefore sought to develop a deeper understanding of the causes of this and to propose viable solutions. This involved a comprehensive examination of the implications of translating user-interface elements from one language to another, looking in particular at the specific cultural needs of Saudi Arabian users, with the intention of improving users' engagement. This study uses an interpretivist research based on the social construction that was utilised in data collection, consisting of interviews and two sequential questionnaires. The main issues identified in the design of the Facebook user interface were the icons and page layout. The current icon images were shown to be unfamiliar and difficult for Saudi users to understand. This was exacerbated by the labels used, which were also found to be too abstract to be meaningful. Regarding the page layout, the alignments were mixed and inconsistent, the positions of elements were horizontally displayed, the pages were too complicated for effective navigation, and the list of options was too long, adversely affecting comprehension. In addition, there were many language errors in the translated Arabic version. These issues led to confusion and overload among Saudi users, causing stress when navigating through the pages. These factors combined to contribute to a lack of engagement with the Arabic version among Saudi users. The consequences of this experience on users' behaviour was also investigated. First, some users were found to confine their interaction with Facebook to the home page and to avoid the setting page. Many users expressed a preference for the English version of Facebook over the Arabic version, although some acclimated to the use of the Arabic version, while others migrated to other social media platforms. The findings show that application of the localisation theory demonstrates that user interfaces designed for one culture cannot always be easily modified to suit another culture without significant modification. Therefore, this research has contributed to the knowledge through the development of design guidelines to aid designers in the creation of a more suitable Arabic version of Facebook. Based on the above findings, this design guidelines proposes to guide user interface designers to incorporate elements that take into account cultural issues into the user interface.

Table of Content

Copyright.....	ii
Acknowledgement.....	iii
Author's declaration.....	iv
Abstract.....	v
CHAPTER 1: INTRODUCTION	1
1.1 Overview	1
1.2 Research Motivation.....	2
1.3 Research Problem	3
1.4 Research Question, Aim and Objective	4
Research Question	4
Aims	4
Objectives.....	5
1.5 Thesis Structure	5
CHAPTER 2: LITERATURE REVIEW	7
2.1 Introduction.....	7
2.2 Social Media and Facebook.....	8
Social Media Design Elements	11
Profiling Saudi Facebook Users	21
2.3 Human–Computer Interaction	21
User Interface.....	22
Theory behind internalisation and localisation.....	23
Culture Differences in Human–Computer Interactions	24
2.4 Design Approaches	26
2.4.1 User-Centred and Participatory Design.....	27
2.5 Localization Factors with current Facebook to fit Saudi Arabia.....	28
Cultural Factors	28
Language and translation.....	37
2.6 Theories to understand users’ perceptions and behaviours.....	38
2.7 Research on conceptual Framework	42
2.8 Chapter Summary and Knowledge Gaps.....	43
CHAPTER 3: METHODOLOGY CHAPTER.....	45
3.1 Introduction.....	45
3.2 Research Philosophy	45
3.3 Research Approach	48
3.4 Research Strategy	48
Perceptions and behaviours towards Facebook	49
Design guidelines development	51
Evaluating the design guidelines - Focus group	52
3.5 Analysis	53
Qualitative Data Analysis	53
Quantitative Data Analysis.....	53
3.6 Ethical considerations	53
3.7 Chapter Summary	54
CHAPTER 4: PERCEPTIONS AND BEHAVIOURS TOWARDS FACEBOOK	55
4.1 Introduction.....	55
4.2 Interview	56

Interview participants	56
4.3 Interview results	57
Icon Design	58
Layout Design	62
Language Issues	66
Interview summary	73
4.4 Questionnaire One	73
Questionnaire One Participants	73
Questionnaire One Results	74
Questionnaire one summary.....	82
4.5 Questionnaire two	82
Questionnaire two Participants	83
Questionnaire two results	83
Questionnaire two summary	89
4.6 Chapter summary	89
CHAPTER 5: DEVELOPMENT OF THE DESIGN GUIDELINES	92
5.1 Introduction.....	92
5.2 Design Guidelines Development	92
Icon Solutions	93
Layout Design Solution	98
Language Solutions	102
5.3 Chapter Summary	108
CHAPTER 6: DESIGN GUIDELINES EVALUATION	109
6.1 Introduction.....	109
6.2 Method.....	109
Participant information for the focus group	110
6.3 Evaluation of the Design guidelines.....	111
Cultural Factors	111
Fixing the Icons: Evaluation of the Icon Design	111
Fixing the Layout Design: Evaluation of the Design of the General and Privacy settings	117
Translation and language problems	120
Evaluation of the translation found in the Privacy Settings.....	122
6.4 Chapter Summary and Final Design guidelines	124
Recommendation.....	127
CHAPTER 7: CONCLUSION	128
7.1 Research summary.....	128
7.2 Research contribution to knowledge.....	129
7.3 Research Limitation	129
7.4 Future Research	130
Other pages of Facebook	131
Cultural factors in designing social media mobile applications	131
Cultural factors affecting the design process for different age groups.....	131
Other cultural factors in social media	131
Navigation behaviour	132
Comparative Study between Saudis living in Saudi Arabia and living in the USA	132
References	133
Appendix.....	158
A. Facebook layout	158

B. Interview	174
C. Questionnaire one	190
D. Questionnaire two	204
E. Focus group	216

List of Tables

Table 1 Example of concrete and abstract icons (Forsythe 2009)	13
Table 2 Differences between the English and Arabic menu positions on the page	17
Table 3 Both English and Arabic versions of the current design for the settings page ..	19
Table 4 Both English and Arabic versions of the current design for adding friends in Facebook.....	19
Table 5 Both Arabic and English versions of the advertisements page in Facebook.....	20
Table 6 Requirements for adaptable interface aspects in the culture model (Reinecke et al. 2010)	32
Table 7 Hofstede’s cultural dimensions and user interface design (Reinecke 2013).....	35
Table 8 Features of positivism and social constructionism (interpretivism) (Bamanathon 2008)	47
Table 9 Participants characteristics who were involved in the interview	57
Table 10 Participants behaviour, based on their usage.....	61
Table 11 Participants’ views of the information structure of Facebook	64
Table 12 Effect on users with low or high hedonic motivation.....	65
Table 13 Questionnaire One participants	74
Table 14 Degree to which participants disliked icons.....	86
Table 15 Relationship between culture dimension and preferred design	94
Table 16 Proposed design solutions for the icon.....	97
Table 17 Saudis preferences and rational of the layout design.....	99
Table 18 proposed Layout design of the setting page	100
Table 19 Proposed correction calendar format to suit Saudi culture	103
Table 20 Proposed new sub-menu found in Settings Page	105
Table 21 proposed Arabic language solutions that suits Saudi culture.....	106
Table 22 Proposed design of the language issues found in the Home page	107
Table 23 Preferred design to suit Saudi culture	108
Table 24 Template used for the design guidelines and focus group.....	110
Table 25 Focus group participants	110
Table 26 Evaluation summary of the icon design	119
Table 27 Evaluation summary of the home page	121
Table 28 Evaluation summary of the privacy settings page	123

List of Figures

Figure 1 Literature structure	8
Figure 2 Number of active users on Facebook from 2008 to 2016 (Statista 2016)	9
Figure 3 Facebook users by age (Statista 2015)	9
Figure 4 Focus of this research.....	11
Figure 5 Differences between vertical and horizontal menus.....	16
Figure 6 Theoretical lens for this research	28
Figure 7 Cultural context differences (Doole and Lowe 2008)	31
Figure 8 Comparison between Saudi Arabia and the US (Greet-hoftede.com 2015).....	34
Figure 9 Research conceptual framework.....	43
Figure 10 Structure of the research methodology	49
Figure 11 Chapter research methods	56
Figure 12 Structure of the interview results	58
Figure 13 The role of Facebook icon design issues on the users behaviours.....	58
Figure 14 Users' perceptions and behaviours towards the design of Facebook's icons	61
Figure 15 Layout design concerning culture differences.....	63
Figure 16 The effect of Hedonic motivation on users attitude and behaviour	65
Figure 17 Process of how inaccurate translation leads to participants' lack of engagement due to inaccurate translation	67
Figure 18 Icons used on the current design of Facebook	75
Figure 19 Participants views of the images used for icons	75
Figure 20 Participants' views of the labels used for icons.....	76
Figure 21 Participant's views of the overall navigation	77
Figure 22 Participants' views of the navigation design of the settings page.....	78
Figure 23 Participants' views about the menus, links and tabs on the profile page.....	78
Figure 24 Participants' views of the Arabic version of Facebook	79
Figure 25 Participants' Facebook version preferences.....	80
Figure 26 Participants' opinions of the layout of the News feed page	80
Figure 27 Participants' perspectives on the positioning of text on the Settings page....	81
Figure 28 Participants views on the text content used in the settings	82
Figure 29 Questionnaire two sample characteristics	83
Figure 30 Participants' view of how icons are confusing.....	84
Figure 31 Participants prefer icons to relate more to their function.....	84
Figure 32 Participants' opinions of having fewer menu options on the settings page ...	87
Figure 33 Participants' preferences for the design of the Settings page	87
Figure 34 Elements found in the Home page	88
Figure 35 Participants' negative responses to issues they found on the Home page.....	88
Figure 36 Participants opinion of the partial translation	89
Figure 37 Chapter 4 summary	91
Figure 38 Proposed design guidelines	93
Figure 39 Icon guidelines.....	116
Figure 40 Layout guidelines	120
Figure 41 Language guidelines.....	124
Figure 42 Final Design guidelines	126

CHAPTER 1: INTRODUCTION

1.1 Overview

Social media has become a ubiquitous aspect of modern life, its popularity having grown exponentially during the last decade, offering a myriad of opportunities for diversified, globalised communication to users around the world (Broadbent 2016). In general terms, social media applications offer platforms that enable users to “stay connected online with their offline friends and new online acquaintances, or to share user-created content” (Facebook developers 2015). Having now reached the vast majority of countries and communities around the world, social media has effectively broken down the barrier of distance, increasing the potential scope for communication and interaction to an almost unprecedented degree. Saudi Arabia is currently dominated by three main social media applications: WhatsApp, Facebook and Twitter (Latifi 2016). Facebook is the most popular social media platform in the world, though the platform’s use varies by country (Facebook 2016). It is only the second most popular social network in Saudi Arabia (Latifi 2016).

This research has focused on Facebook because it is currently the largest and most influential social media platform in the global marketplace, with over one billion daily active users worldwide (Facebook 2016). Facebook, following its initial development and release in 2004, has gained enormous popularity as a free tool for both personal and professional communication (Noyes 2015). Facebook enables users to reconnect with contacts or build friendships and to share opinions, photos, videos, links, ideas, events, news updates, activities and other information to users’ individual networks (Brooks 2014).

Initially, Facebook was designed for the use of English-speaking users living in the United States (US). However, by 2009, Facebook had been released in 37 different languages, with users outside the US and Canada comprising 83% of its total user base (Facebook 2017). Steps were therefore taken to ensure that those responsible for the application’s release in other countries clearly understood the specific culture and needs of their target users in an attempt to prevent or minimise any potential confusion in its usage (Aykin 2016).

Given that Facebook users exist all around the world and that many speak different languages, cultural awareness is a crucial aspect of its interface design, enabling users to easily understand and navigate the platform irrespective of their personal background or context (Ross and Gao 2015). Studies have shown that individuals generally feel most comfortable when they are interacting with a user interface that conforms to their cultural norms, which is referred to as cultural orientation (Reinecke 2010). In other words, culture orientation describes the “degree to which individuals are influenced by and actively engage in the traditions, norms and practices of a specific culture” (Tsai and Chentsova-Dutton 2002 p.95). This includes the ways in which software is designed and written and how its information is organised. In the case of user interface design, these considerations can profoundly affect users’ understanding and interpretation and their reception to the information presented (Al-Badi and Mayhew 2010).

The effectiveness of user interface design for users in different countries can potentially be influenced by a multiplicity of factors, including human and technical considerations, as well as a number of potential cultural and linguistic issues (Solovyeva et al. 2015). These include factors like translation and ease of navigation with respect to local accepted norms and expectations (Yu and Kong 2015). A number of identifiable user interface parameters and design principles can be applied by designers to optimally support users from different cultures, enabling them to more easily understand and utilise the interface (Matusiak 2012). This influence of cultural factors is a possible explanation for why the Arabic version of Facebook is not currently the most popular social media platform in Saudi Arabia. Therefore, the scope of this research is to examine the interaction between culture, the user interface’s elements and the attitudes and behaviours of users towards Facebook.

1.2 Research Motivation

Facebook is the second most popular social media platform in Saudi Arabia (Latifi 2016). Despite these numbers, Maline (2016) claims that the Arabic version of Facebook has not gained particularly widespread popularity among Saudi Arabian users. This is not the case in many other Middle Eastern countries, such as Jordan and Libya, where Facebook is the most popular platform (Arabian Gazette 2015). However, El Mourad (2016) conducted a study and found that Facebook’s popularity has declined by 6% across Egypt, Lebanon, Qatar, Saudi Arabia, Tunisia and the UAE during the last

three years, with usage down 17% with a significant proportion (89%) of Saudi Arabians expressing concerns about privacy. This has changed the way in which they use social media. Therefore, this research is motivated by the desire to discover whether this reduction in popularity can be attributed to either Facebook's design or the translation used in its Arabic version.

1.3 Research Problem

Different cultures have been shown to prefer different interface designs (Browne et al. 2016). However, it is unclear from the literature whether a Facebook platform designed for a Western culture can be accepted by a strict Arabic culture, such as that of Saudi Arabia. It is even more unclear whether any level of cultural adaptation will eventually be accepted by users in Saudi Arabia or whether the platform's core is inherently incompatible with Saudi values.

Facebook changes almost every year when its developers find new ways to improve the layout as a result of user feedback (Mullins 2016). One of these changes occurs due to a factor that has been widely recognised: that interface design should be adapted to reflect different cultures through what is called "disorientation" (Bernad 2002). Nevertheless, the literature is still vague concerning the way in which the misalignment between culture and user interface affects users' behaviours towards socialising with friends and family on social media platforms like Facebook.

Language translation is another issue. Arabic is the official language of Saudi Arabia and the first language of nearly all native Saudi Arabians (Al Mutiri 2015). However, according to Maline (2011), only 61% of the Facebook users in Saudi Arabia use the Arabic version, which could potentially be attributed to the greater sensitivity of Saudi Arabian towards the translation of Facebook's content compared to other Arabic speakers, some of whom may use Arabic as a second language. Facebook has a broad set of tools, allowing users to have various experiences and enabling communication through a wide variety of media (Downie 2016). It is known that translation mistakes in an interface can result in annoyance and distortion of a user's experience (Shneiderman 2010); however, to date, no study has shown how inaccurate translation may affect the individuals' behaviours during their interactions with Facebook.

Despite the user interface having been translated into Arabic, Facebook may not have been modified it specifically for Saudi users, who may be more sensitive to inaccurate translation, as noted above. Saudi Arabians' first language is Arabic, and it is the language of the Quran, the Holy book of Islam (Simons 2016).

As an example of this limited provision, Facebook's developers have created a translation error page where users can report translation issues in German, Italian, French, Turkish and Japanese, but this functionality was not released for the Arabic interface (Facebook 2016). Therefore, this study will investigate the culture and preferences of Saudi users in relation to the Arabic version's design of the Facebook user interface. This first entails an understanding of the various interface parameters and of the salient aspects of Saudi Arabian culture. This research approach is supported by the literature, which underlines the importance of designing interfaces that meet the language and cultural expectations of users (Marcus 2015). In other words, it is possible that the reliance upon a universal design approach based upon Western tastes may lead to less than ideal levels of user satisfaction because things that might be acceptable in one culture may be unwelcome in another (Qutub 2008). For this reason, Alsaif (2014) argues that the effective introduction of technology requires designers to properly understand the target users' culture, taking into account their traditions, social norms and thinking patterns, as well as their privilege and practice.

1.4 Research Question, Aim and Objective

Research Question

How does the misalignment between the original user interface of Facebook (developed in the USA) and its Arabic version affect Saudi Arabian users' perceptions, expectations, attitudes and behaviours?

Aims

By answering this research question, this research can deliver the aim of the following:

“Developing design guidelines for understanding the implications of the current Arabic Facebook user interface in response to the specific culture and language of Saudi Arabian users, so that its design can be improved”.

Objectives

This study's objectives include the following:

- (1) To conduct a literature review to gain a good understanding of the users' needs and to enhance the Arabic user interface design for Facebook.
- (2) To develop a tool to understand Saudi Arabian users' attitudes and behaviours towards Facebook.
- (3) To understand Saudi Arabians' views on the current design of Facebook's Arabic version.
- (4) To develop design guidelines to aid Facebook developers in incorporating culturally related issues into Facebook's Arabic version.
- (5) To evaluate the design guidelines by using a focus group.

1.5 Thesis Structure

Chapter Two (LITERATURE REVIEW): This chapter synthesises and criticises the literature relevant to social media, with particular emphasis on Facebook. It begins by examining and defining the design elements of social media. The review then discusses the theories related to how people interact with different interfaces (i.e. human-computer interaction theories) and how these interactions can affect the users behaviour. It also includes a different design approach, which are participatory- and user-centred to fulfil the users' needs. Previous studies are comprehensively reviewed, informing the selection of the best methods for adapting the user interface to suit users' expectations, perceptions and behaviours. This chapter concludes with a theoretical debate primarily focused upon the various considerations and variables associated with the localisation versus globalisation of the interface design. This is followed by the development of a conceptual framework, which includes the factors of cultures and languages; this seeks to inform the subsequent design of the localised user interface. Finally, the chapter summary concludes by demonstrating the knowledge gaps, enabling the current study to be situated concerning extant literature.

Chapter Three (METHODOLOGY): This chapter outlines the specific philosophical underpinnings and methodological approach utilised in this study. This study uses an interpretivist research method based on the social construction of reality, using both a qualitative and quantitative approach to triangulate the evidence to support the

understanding of the users' attitudes, motivations and behaviours regarding each of the key design elements. After the development of the design guidelines for the resolution of the identified issues, a focus group evaluates the solutions and design guidelines.

Chapter Four (PERCEPTIONS OF AND BEHAVIOURS TOWARDS FACEBOOK): After detailing the chapter about the research method, this chapter provides an analysis of the data sets obtained in this study. This is structured into culturally related issues, language-related issues and the development of the design guidelines needed for understanding users' perceptions, attitudes and behaviours towards each of these issues.

Chapter Five (DEVELOPMENT OF THE DESIGN GUIDELINES): This chapter presents and discusses the design guidelines introduced in the previous chapter and includes an in-depth discussion enabling effective conceptual solutions to be developed. This chapter therefore includes a discussion on the culturally related design (icons and layout) and the language-related design (text alignment and translation issues).

Chapter Six (DESIGN GUIDELINES AND EVALUATION): This chapter covers the creation of the design guidelines and its subsequent evaluation. This process is structured into the following sections: cultural and language issues (i.e. fixing the icon-, layout- and language-related issues in the new design guidelines and evaluating those changes) and the outcome (i.e. the comprehensive design guidelines that address fixing all of the issues identified, as well as those issues' evaluations).

Chapter Seven (CONCLUSION): This chapter concludes the study, outlining the key aspects of the discussion and providing a coherent answer to the research question. The limitations of the thesis are briefly discussed, and key proposals are made regarding the potential avenues for future research that may emerge from the current study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter demonstrates this research's theoretical basis and clarifies the gaps that currently exist in the knowledge regarding this specific context. It starts with a broad overview of the extant literature on social media in an attempt to identify the social media platforms' general design themes to clarify and define the Facebook design elements that provide a solid conceptual basis upon which to gain a deep understanding of Saudi perceptions and attitudes towards social media. To supplement this analysis, typical Saudi Facebook users are profiled to identify the research focus and to determine who will be interviewed and sampled. As this research's aim is to understand the attitudes and motivations of Saudi users and their interaction with the interface, this chapter provides a succinct overview of human-computer interaction research and design approaches, which include participatory and user-centred designs; these introduce the theoretical debate at the heart of this study.

This research relates to the difference between internationalisation (i.e. having the same interface design everywhere) and localisation (i.e. interface customisation to fit a particular culture and location), with a focus on the design processes and an examination of which design is more effective. It has been suggested that if different cultures have different design preferences, localisation may outperform internationalisation. Therefore, this chapter explores the participatory design approach and cultural factors in an attempt to develop a viable theoretical lens for an improved understanding of design preferences, including layout and language translation, which may be distinct from other countries and from other cultures' preferences. Moreover, if the designer has different preferences than users or a limited understanding of user preferences, then localisation would likely be more effective than internationalisation. For this reason, this chapter analyses previous research related to technology acceptance theories and discusses the impact of differences in views on the design and the use of the user interface, as well as how these may impact user behaviour. Before concluding the chapter, the salient theories for understanding the relationship between attitudes towards different design elements and user behaviour are presented (see Figure 1).

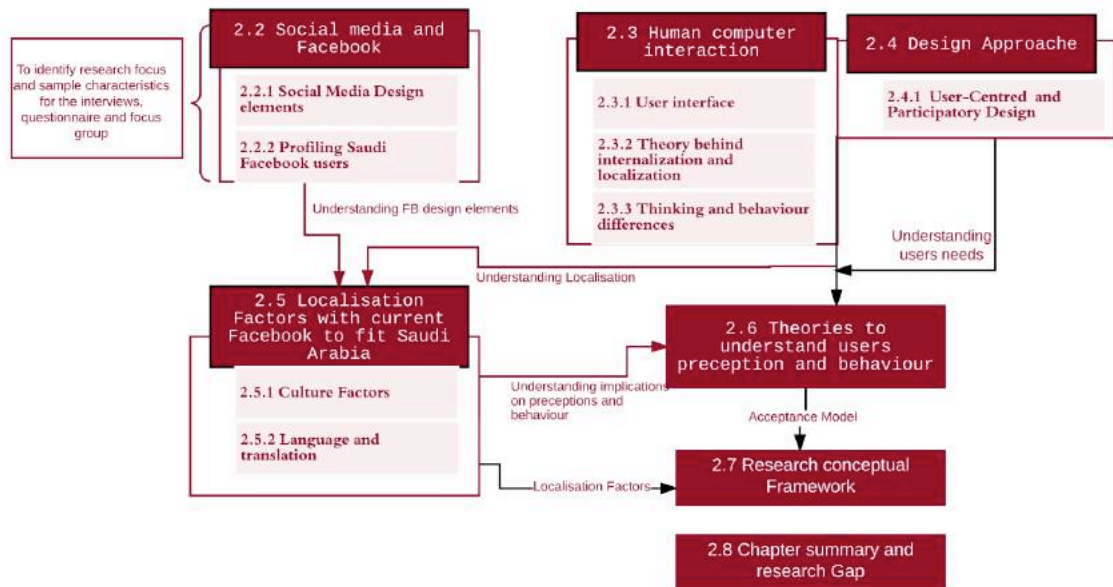


Figure 1 Literature structure

2.2 Social Media and Facebook

Social media refers to the set of communication tools that are part of the online environment and that allow users to create public profiles and connect with others, irrespective of their location in the world (Weber and Monge 2016). Therefore, social media platforms allow users to quickly and easily share a wealth of personal data and content, such as contact information, messages, pictures or information about social events (Gerson et al. 2016). It is claimed that Facebook is the most popular social network in the world, combining almost all social aspects into one location (Facebook Newsroom 2016). Therefore, this research focuses on Facebook due to its current position as the market leader.

Facebook was created in February 2004 and quickly revolutionized online social networking (Gonzalez-Lafaysse 2016). Facebook has been through a number of significant changes between 2004 and 2016, including improvements to its messenger features, mobile phone uploading and texting features, search functionality, media sharing functionality and video uploading functionality (Marques 2016). Today, Facebook is generally considered the biggest available social media platform in terms of both recognition and number of users (Helmrich 2016). By 2012, Facebook had 900 million global users, leaving 3.2 billion comments and “likes” per month (McGee 2012). The number of active users has continued to increase since Facebook’s inception,

reaching 1.79 billion monthly active users in 2016 (Statista 2016). Figure 2 illustrates the growth in the number of users worldwide, from 2008 to 2016.

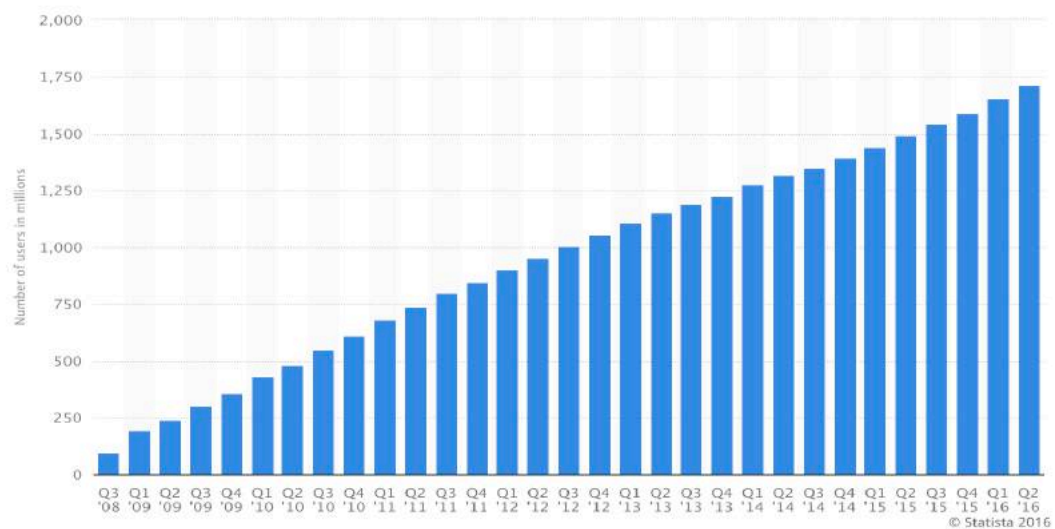


Figure 2 Number of active users on Facebook from 2008 to 2016 (Statista 2016)

As can be seen in Figure 3, more than a quarter of Facebook users are teenagers and young adults (age 16-34), with the largest segment of users aged between 25 and 34 years. Because of this, the current research’s focus is to understand the perspective of users in this age bracket, especially concerning their behaviour and responses to different Facebook design elements.

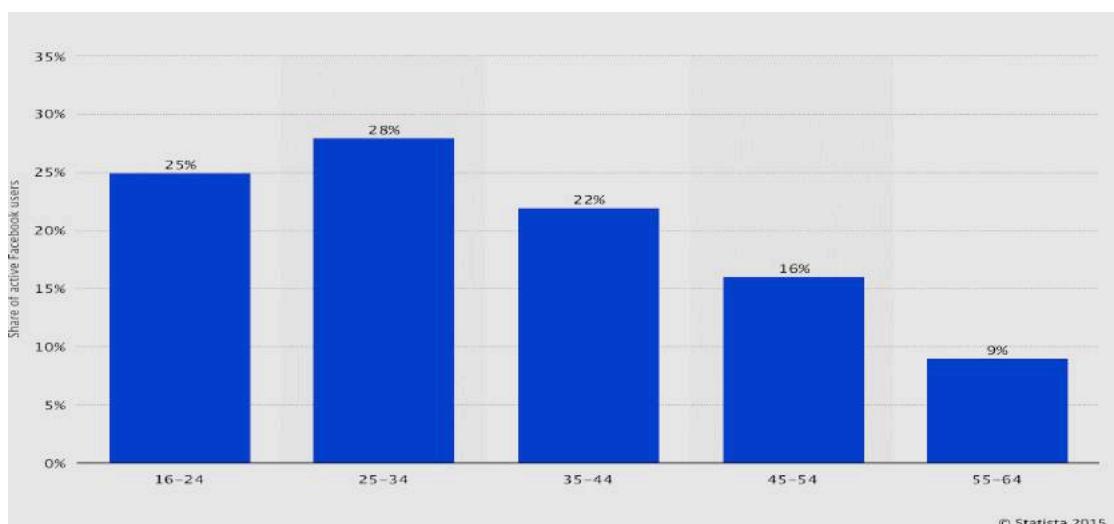


Figure 3 Facebook users by age (Statista 2015)

As with any social media site or application, numerous different software application qualities can potentially affect engagement and usage levels (Junco 2012). These

considerations comprise the system's functionality (what it allows you to do), interface (how it allows you to do this), and reliability (how often it prevents you from doing this). This research's scope is confined to an examination of interface design due to the perception that this is mostly influenced by cultural factors (Aykin 2016). In other words, having a reliable design is an international requirement, regardless of the culture (Aykin 2016b), meaning that functionality should not change and, as such, will not be investigated in this research. Instead, because interface design is recognised as being the most perceived element and the one most influenced by culture and psychology (Cañas-Bajo et al. 2015), this element of the Facebook user interface comprises this study's key focus.

The Facebook user interface was originally designed to meet the needs of English-speaking users in the US; however, the application's growth in popularity led the developers to expand their focus (Mehta 2013). The current iteration of the Facebook user interface offers a localised version for 37 languages, one of which is Arabic; this is the focus of this research. Therefore, in summary, this research examines the user interface design of the Arabic version of Facebook, and the targeted age group is Arabic-speaking Facebook users between 18 and 34 years (see Figure 4).

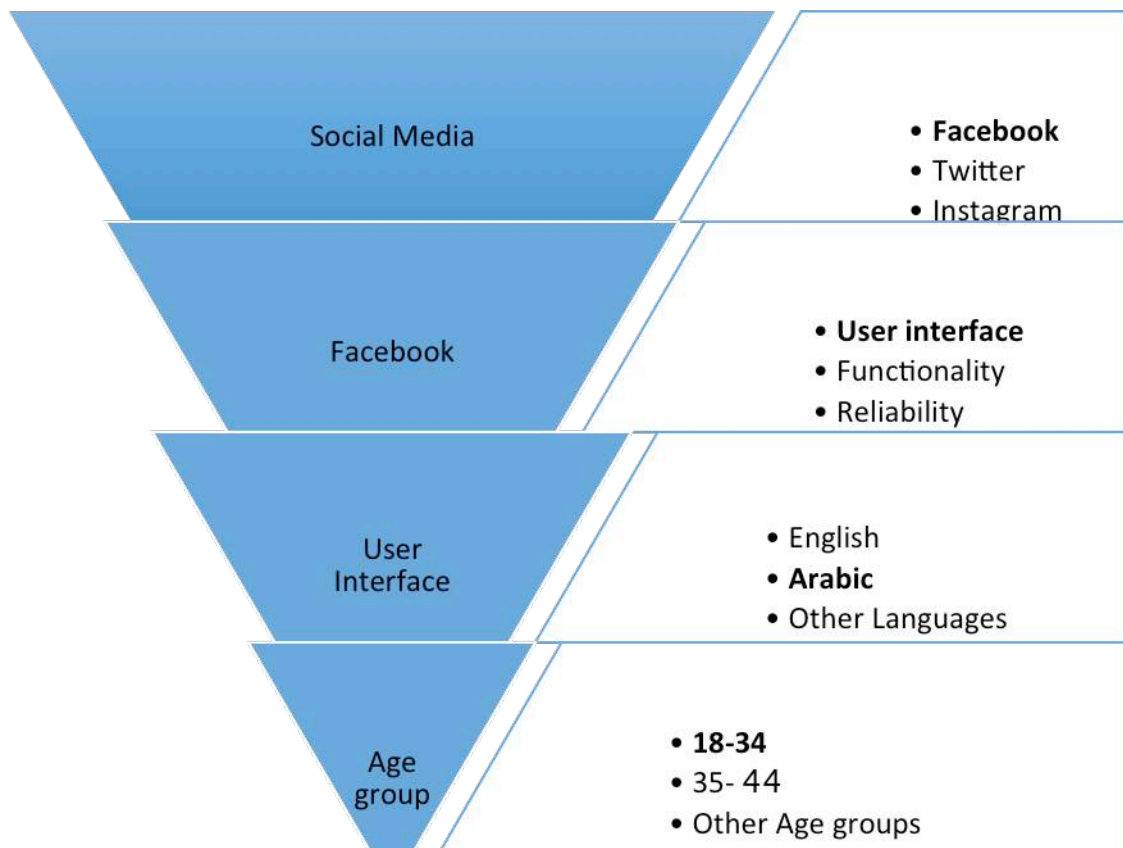


Figure 4 Focus of this research

Social Media Design Elements

Social media is used by individuals and businesses, a fact that presents new challenges and opportunities for all users (Kietzmann et al. 2011). As part of their core functionality, social media user interfaces facilitate the organisation of content and activities, such as adding friends, collaborating and advertising (Daghfous and Ahmad 2015) and allowing users to generate universal text, image and video content (Akar and Topçu 2011). This research focuses on how users rely on social media platforms to socialize with their friends and family online.

Kietzmann et al. (2011 P. 241–251) define social media as platforms that “utilize functional building blocks to facilitate and permit: Identity: where users reveal their identity (name, age, gender, profession, location etc.)”. They define the key factors in this definition as follows:

“Conversation: where users can communicate with others by sending messages or any sort of media. Sharing: allow users to either exchange, distribute, or receive content by others online. Relationships: allow users to build new relationships with others either by mutual friends or fans. Groups: either groups that contain only close friends or followers or those that comprise an offline world that is open for anyone to join”.

These five aspects are reflected in the social media design through different design elements, the result of which is that every application has a unique user interface design (Crumlish and Malone 2009).

2.2.1.1 Icons

When users interact with the social media's layout design, icons appear on almost all interfaces. Whether users are using computers, tablets, or smartphones, the majority of users simply click buttons on on-screen graphical user interfaces or click visual icons, which enable them to operate the devices and execute program instructions (Näsänen and Ojanpää 2003). Presenting graphical icons in a comforting way enables users to more easily and quickly locate their desired functions or objects (Huang 2008; Lindberg and Näsänen 2003). In practice, icons are categorized into three types based on their styles and usage: concrete, abstract, and arbitrary (McDougall and Curry 2007; Microsoft 2008). However, this research focuses on how the use of icons impact user navigation when interacting with Facebook's user interface design. Therefore, this research observes Saudi Arabian perspectives on how users see the icons designed in the current Facebook layout design. The following are more details of the different icon styles.

A. Concrete versus Abstract Icons

When interacting with social media, such as Facebook, users either find that social media uses concrete or abstract icons. Khanom et al. (2014) explain that "concrete icons are also known as representational icons, and their design generally reflects the object or action they represent". Concrete icons are typically highly effective because their design style is easily understood, taught, learned, and retained (Ng and Chan 2008). In contrast, abstract icons are based upon an example or concept of a real-world object or action (Tan and Payton 2010). This icon style conveys an example of the meaning rather than the design showing the object itself. As a consequence, users may find the icons to be abstract where they tend to be more difficult to comprehend, as they are intended to focus on a particular concept rather than on the direct object (Khanom et al. 2014). Therefore, this research observes Saudi Arabians' views on the current icon designs used on Facebook and whether they find those designs abstract or concrete. Table 1 shows an example of a concrete and an abstract icon.



Abstract icon	Concrete icon
 <p>Entrance</p>	 <p>Baggage lockers</p>

Table 1 Example of concrete and abstract icons (Forsythe 2009)

B. Familiarity

Research has consistently shown that icon familiarity is a more important determinant in identification ease than any other icon characteristic (Isherwood and McDougall 2007), with icons on an interface familiar to the user perceived as easier to process (Cho et al. 2009). This research focuses on analysing Saudi Arabian users based on their perceptions towards icon designs. A correlation has also been noted between icon familiarity and visual complexity, meaning that familiar icons are typically perceived as simpler (Chi and Dewi 2014). This is often reflected in the judgments users make about how appealing the icons are. These familiar icons can achieve positive effects, such as drawing attention, shortening search time, reducing operational errors, and relieving the burden on users (Lin et al. 2016). Furthermore, studies have found that simple and user-familiar icons are found more quickly on an interface array than those which are complex or unknown (McDougall and Isherwood 2009). The users who are not familiar with the icon's meaning, especially for Facebook, may become confused with the navigation. Previous studies established that familiarity and visual complexity, which are important predictors of icon appeal, both improve performance with icons (McDougall et al. 2016).

Familiarity is subjective and tends to differ from place to place, culture to culture, and country to country. Icons are symbols, and the same symbol can have different meanings in different places because the meaning ascribed to a symbol is largely dependent on sociocultural context (Islam and Bouwman 2016). However, it is believed that when icons are used often enough, familiarity is created in users' minds, leading them to become more widely understood and accepted (McDougall et al. 2016). Therefore, this research observes Saudi Arabians' perceptions on the images and icons used by Facebook and whether they find the images used in icons complicated when trying to understand meaning, and how this impacts their navigation within the user design.

C. Icons with Avatars

An avatar is a representation of the user. Icons can be abstract with no avatar or can be designed with an avatar. The avatar's use has different rationales; perhaps the most important is to help the user understand what will happen once the icon is clicked (Rovira 2004). This research observes Saudis' perceptions on whether the current icon designs for Facebook are clear or whether they prefer an avatar to help them with understanding and navigation. Using an avatar as an icon for any interface design can help those users with less computer experience better understand a piece of software or website structure, thereby enabling them to more effectively and comfortably navigate the system (Darejeh and Singh 2013).

2.2.1.2 Navigation

Balakrishnan and Sundar (2011 P. 1233–1259) stated that “navigation involves both the physical act of movements and the cognitive act of deciding where to go”. In terms of social networking sites, navigation measures the degree to which a user feels relevant as an actor in a computer-mediated communication situation (Sundar 2006). The term “navigation” has been associated with a number of different meanings (Kalbach 2007), the most important of which are (a) the theory and practice of moving from page to page and (b) the process of goal-directed seeking and locating hyperlinked information (Leuthold et al. 2011). This research investigates Saudis' preferences regarding how the user navigates the Facebook user interface design. Therefore, the following are more details about the differences between styles when navigating the Facebook user interface design.

A. Standardisation of the navigation

The most ubiquitous social media applications worldwide, such as Twitter and Facebook, have standardised the interaction and visual design, enabling users to quickly understand and acclimate to their usage, at least in Western cultures (Pessagno 2010). The navigation links – which direct users to the main content of each site – are placed in different locations. Chinthakayala et al. (2011. P. 1233–1259) stated that

“Facebook places the primary navigation links at the left side and at the top, while MySpace and Twitter display the primary navigation links at the top.

Regarding the organisation of navigation links, MySpace has the largest number of navigation links and Twitter has the fewest, with Facebook being in between”.

However, this research observes Saudi Arabians regarding their navigation preferences and whether the current design of the Arabic version of Facebook is suited for and clear to Saudi users.

B. Vertical versus horizontal navigation

There are two main approaches regarding the navigation structuring: vertical navigation, which positions all menus and options vertically on either the left or the right side of the page, and horizontal navigation, which situates the options and icons at either the top or the bottom of the page. With respect to social media, Facebook’s pages utilise both vertical and horizontal menu designs (Bakker et al. 2015). For instance, Facebook’s homepage and profile page use both horizontal and vertical menus. However, the menu in the settings page is purely horizontal. In contrast, Twitter only uses horizontal menus.

There are advantages and disadvantages to both horizontal and vertical menu structures (Dang and Mestre 2011). Designing the menu horizontally allows designers to make use of the full screen width for content (Eccher 2011). The current design of Facebook’s settings page is horizontal to utilize the page’s horizontal space. For this reason, horizontal menus are generally deemed more useful for a content-rich interface, as these menus allow more room to expand sideways (Rocheleau 2015). However, if more space is needed for a horizontal menu, then another row will have to be added to the menu, which can adversely affect usability (Eccher 2011). Also, these kinds of menus can sometimes exceed the viewable area of the screen at lesser resolutions. In contrast, vertical menus can be expanded easily because they can stretch downward, enabling a user to scroll down (Eccher 2011). This can, therefore, be an advantage for sites that lack content, where designers need to consider making the vertical menu wider to fill screen space (Eccher 2011). Anthony (2010) argues that the benefit of vertical navigation is that it takes up comparatively less of the page than horizontally designed menus. Studies have shown that layouts should match the selected language for a website (Euromonitor International 2011). Khan and Alhousseini (2015) conducted a study between horizontal and vertical menus and differences in language. He concluded that some users prefer vertical and some horizontal, depending on their navigation preferences. Figure 5 illustrates the differences between the vertical and horizontal

menu designs. Therefore, this research will analyse Saudi Arabian views on the current design of Facebook’s Arabic user interface design.


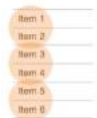
Vertical	Horizontal
	

Figure 5 Differences between vertical and horizontal menus

C. Interface (navigation) complexity

The visual complexity of a user interface design interpreted through a holistic view of a homepage’s visual information impacts each user’s evaluation of the design (Lindgaard 2006). In essence, all individuals will perceive a user interface as either simple or complex (Finnerty et al. 2013). The definition of a simple layout is one in which a user finds it easy to understand the system, regardless of that user’s experience (Finnerty et al. 2013). However, Allanwood and Beare (2014) stated that “simplicity does not mean reducing opportunities for interaction: it means framing these opportunities within a relevant and consistent schema”. However, a complex layout is one that a user finds cluttered, busy or confusing, perhaps due to the many choices that have been presented (Galitz 2007). Marcus (2001) argues that different cultures prefer a user interface to be either rich in content or to have limited, focused content, stating that people from cultures with high uncertainty avoidance prefer clean, sparse layouts to prevent confusion. People within a high uncertainty avoidance culture prefer the layout to be less complex (Reinecke 2010). However, this research will observe Saudi Arabians’ views of the current design of the Arabic version of Facebook and whether they find the layout to be complex or simple and how it effects their interaction with others and/or their understanding of how to navigate Facebook.

2.2.1.3 Facebook Page Types

As discussed above, Facebook is a comprehensive platform that contains many elements (Kaplan and Haenlein 2010). The following sections outline the main pages of the Facebook user interface with respect to platform design.

Main Pages

Facebook has two core components: a homepage and a profile page. After the user log in to Facebook, that user will be taken to the homepage, which is considered the main page of the social media platform. It includes all of the navigation menus to direct users to their news feeds, settings page and others pages, such as groups and events. In the English version, the main navigation links and elements are found on the left-hand side of the homepage. There are also navigation shortcuts in the banner on the right, which includes a link to the profile page, settings page and account information for each user. However, in the Arabic version, the navigation menu is placed on the right and the shortcut menus in the banner are placed on the left (see Table 2). Therefore, this research observes Saudis' views of the design and whether the placement and positioning in Arabic layout is suited for its target audience.



Table 2 Differences between the English and Arabic menu positions on the page

The homepage includes the entire updated list of posts that have been made by friends, groups and other connections unique to that particular user. This list is called the ‘newsfeed’, and it allows users to reply to posts by liking the post, sharing photos or videos, or making written comments. This page is considered the most used page and is where all of the updated news from friends and family is presented.

The personal profile page is referred to as the ‘timeline’. This page is where users enter their personal information, incorporating everything that they post on Facebook. It includes the user’s status posts and enables the user to comment and share photos or videos. It also allows users to share external links from the web or to express their

feelings using comments and emojis. After posting something, the new item will appear in the timeline with posts by that user's friends.

Facebook has several interactive features, perhaps the most well known of which is the 'wall', a space on the profile page of every user where friends can post and share messages (Abram 2016). Like other social networks, such as Twitter, Facebook enables individuals to express themselves and maintain or create new connections with their friends and loved ones (Kaplan and Haenlein 2010). The effective delivery and understanding of these features requires the user interface to be well designed and well suited for all individuals using the social networking application. The wall is like a "bulletin board where users can post notes, comments or receive feedback from other users" (Wagner 2011 p.1-4). Therefore, both the home page and profile page are considered the most used pages, as they contain almost all of the important elements that Facebook users need to understand to communicate with others on Facebook. If users find the navigation issues in the home page and profile page complicated, they may misuse its elements or have navigation issues with the rest of Facebook's pages. The following are other important subpages that users may need to understand to use Facebook in a correct manner and without confusion.

A. Settings page

The settings page allows users to control who sees their information and posts (Madejski et al. 2011). This page is considered the most important page for Saudi users. As mentioned in Section 1.3, Saudis are concerned with their privacy when using Facebook. Therefore, understanding the settings page is important, so the user can eliminate any confusion and customize the settings to prevent users from gaining access to personal information. The settings' options enable users to modify data security and visibility settings according to personal preferences concerning general settings, security, privacy, timeline and tagging, blocking others, language use, notifications, mobile use, public posts, app use, advert use, payments, inbox support and video settings (Abram 2016). This page's design is horizontal, with each setting based on text and links that must be followed to modify each setting (see Table 3). Each option will also provide a link that users can click to limit their information so it is only available to themselves or their friends or so they can make it public (Facebook 2016).

English Platform	Arabic Platform

Table 3 Both English and Arabic versions of the current design for the settings page

B. Finding and organizing friends

This page enables users to search for friends. It is accessible from both the homepage and timeline. Adding friend on Facebook is one of the main features users do when they are on Facebook. Therefore, users must be able to understand Facebook’s function and its design to use it correctly. There are many ways in which users can add friends on Facebook, such as importing friends from their email accounts, discovering mutual friends (friends of current friends), or by adding friends suggested by Facebook after searching by using a range of criteria, such as name, town, school, place of employment or university name (Abram 2016). This feature is available through an icon on the side of the homepage and profile page, as well as in the banner (see Table 4).

English Platform	Arabic Platform

Table 4 Both English and Arabic versions of the current design for adding friends in Facebook

C. Advertisements page

Facebook advertising is extremely popular. It is available to businesses and users, who can add their own advertisement page, which can then be posted publicly (Graham 2011). This page is not only for users who want to advertise but for users who want to surf or buy products and pay for services. Therefore, understanding the layout design of the advertisements is also important. In the advertisement page, users can adjust their target customers by location, gender, age, keyword or workplace. Facebook advertisements allow users to interact with other users in much the same way as businesses attempting to engage on Facebook (Curran et al. 2011). The advertisement

icon is located on the homepage and on the profile page and directs the business-oriented user to the advertisement settings, where more information is available regarding how to advertise or modify the advertising process using Facebook (see Table 5).

English Platform	Arabic Platform

Table 5 Both Arabic and English versions of the advertisements page in Facebook

D. Groups and events

Facebook groups and events are meant for users to discuss or relate to certain issues. Groups are considered one of the most popular pages for users to organize with their online friends and family. A group page is an online forum that allows users with similar interests to join and converse about any topic they choose (Lampe et al. 2007). Events are created when users have a particular planned occasion, such as a party or meeting, which they invite their friends or other users to join. The events page allows users to select whether they will attend a particular event, thereby allowing the event creator to keep track of everyone who has been invited and who intends to attend or otherwise (Abram 2016). Users can find groups and events on the Homepage or Profile page.

E. Games

Facebook has a wide range of third-party applications that users can play while logged in to their account (Abram 2016). The most interesting part of this functionality is that it allows users to play in Facebook and then share their score or even to play with friends, family and other Facebook users (Coombs and Holladay 2015). It is also considered one of the most popular elements used by most Facebook users. Therefore, understanding the design elements and its features is crucial for users to enjoy playing online without any confusion.

Profiling Saudi Facebook Users

This research focuses on the Saudi Arabian culture, specifically concerning the usage of the Arabic version of Facebook. The majority of Saudi users access Facebook at home (97%), followed by at university (17%) or in cafés (14.8%) (Aljasir et al. 2013). A total of 8 million Saudi people use Facebook (Statista 2016), of which more than half are between the ages of 25 and 34 years (Hubbard 2015). A slightly higher proportion of women use Facebook in Saudi Arabia than men, with 56% females and 44% males using the program (Statista 2013). This research is therefore focused on both genders, with an emphasis on those between 25 and 34 years old, who comprise the majority of Facebook users in Saudi Arabia.

According to Brian (2011), when Facebook introduced its Arabic platform to the Middle East in 2009, it gained 10 million users worldwide. However, many Saudi Arabian users elect not to utilise the Arabic version of Facebook (Al Arabiya News 2014). Less than two-thirds (61%) of the total Facebook users in Saudi Arabia have taken advantage of its translated Arabic platform (Brian 2011). Given that Saudi Arabia is a country where all citizens speak Arabic, the poor adoption of Facebook's Arabic version is surprising, and it is this low adoption that this thesis investigates.

2.3 Human–Computer Interaction

The interactions between users and the Facebook interface can be understood and examined from the perspective of human–computer interaction. The Association for Computing Machinery ACM SIGCHI (1992) defines human–computer interaction as

“a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them”.

Galitz (2007) argues that people tend to focus more on negative experiences, making them more likely to report their negative experiences when using a system. The psychological responses to the poor design of user interfaces can be diverse, including confusion, annoyance, frustration, panic or stress, and boredom (Galitz 2007). Galitz (2007) describes these psychological responses to user interface design as follows: Confusion occurs when the perceived structure is overwhelmed by detail and when the user finds it difficult to understand the principles underpinning the design. Annoyance occurs due to obstructions in the path towards the user’s end goal and due to slow reactions by the computer, information that is obsolete or hard to find, and visual distractions on-screen. This bears similarity to frustration, which denotes the inability to do what was originally intended, a failure to understand or communicate effectively with the computer, or simply a consecutive accumulation of annoying factors. The next response is panic or stress, which occurs when the system breaks down or becomes unavailable at a crucial moment, such as when workload or time pressure is high. Finally, boredom can occur when the system response is unreasonably slow or when it takes too long to download updates (Galitz 2007). It is proposed in this research, like other studies (Kaptelinin 1996), that these unintended consequences can arise due to the inherent differences between the knowledge, skills, abilities, experiences and cultures of system designers and consumers. However, there is no clear evidence regarding how users experience social media, such as how the Facebook user interface may impact users’ interactions when socializing.

User Interface

The user interface is “a set of interaction elements that allow the user to perform a task in a context” (Gallud and Tesoriero 2011, p.2). User interface design facilitates the interaction process between a computer and its users and may actually comprise the entirety of the user experience (Stone et al. 2005). The importance of the elements of the user interface design has been further underlined in the context of human–computer interaction, especially given that this area of study is concerned with effectively meeting the individuals’ needs when using computers or other smart devices (Galitz 2007).

The research on user interface design shows that user experience is strongly shaped by a ‘good’ design (Tidwell 2010). The definition of a ‘good’ design can potentially be problematic, though it usually implies that a given interface is easy to use and to learn (Nielsen 2000) from the perspective of the users rather than that of the producer. Béguin (2003, p.709) stated that “perception of ease of use and ease of learning (learnability) are not based on the design factor in itself; they are based on both the mutual understanding between user and designer”. Ease of use has been positively correlated with user satisfaction, as has interactivity, which describes a given design’s ability to enable the user (Yu and Kong 2015). Therefore, an interface that is designed well is not confusing and is easy to use, making it better able to satisfy the user’s interaction needs (Sundar et al. 2014). Therefore, the focus of this research is to analyse Saudi Arabian users in relation to the current design of Facebook’s Arabic version and to propose a layout design that is better suited to those users’ preferences.

Designing a ‘good’ user interface is intended to maximise user satisfaction and allow users to better communicate without any confusion or misunderstandings (Browne et al. 2016). However, developers should maintain close contact with their users to ensure that any design deficiencies are discovered when translating or placing elements, thereby reducing the chance for confusion (Motti and Caine 2016). To facilitate this clarity in communication, an understanding of the users’ culture is therefore essential when building the design, as will be discussed in the following section.

Theory behind internalisation and localisation

The constituents of good design tends to differ from place to place because what is easy to use will vary due to cultural factors. The debate on internalisation versus localisation is therefore highly significant in international user-interface designs. On the one hand, internalisation is a more important consideration if designers want to go global, as it becomes important to develop a design that will be acceptable for most countries (Marcus; 2001). Therefore, the process behind internalisation is the design of a user interface that could potentially be accepted by different cultures (Bargas-Avila and Bruehlmann 2016). On the other hand, localising a user interface design involves the adaptation of linguistic and cultural content to suit target audiences (Marcus 2001) through the accurate, sensitive translation of the language, character sets and notation. Therefore, this research will focus on how to localise Facebook’s layout design to suit

Saudi culture. This process seeks to ensure that the user interface is clear and comprehensible for local users, thereby increasing the degree to which a given system is usable in those specific contexts. This occurs by localising factors, such as the time zone, date format, and currency (Karpoff 2013), as well as the graphics, colour, and calendar (Cyr and Trevor-Smith 2004) to the forms that are correct and culturally appropriate in the targeted culture. This research ensures that the language, culture, text and numeral format are localised to prevent confusion and to facilitate a good user experience (Al-Badi and Mayhew 2010).

Users will have an inherently better understanding of an interface's visuals if the design of icons, symbols, and navigation tools have been correctly targeted to meet the needs of local users (Cyr and Trevor-Smith 2004). This localisation process has also been shown to increase user satisfaction (Bargas-Avila 2016). With specific reference to the Middle East, Cyr and Trevor-Smith (2004) showed that a localised site allowed users to more effectively interact and find information than sites developed for the US. These findings ask the question of how localisation could be better than internationalisation when it comes to social media platforms, such as Facebook.

Culture Differences in Human–Computer Interactions

Differences in cultures often arise from a distinction in perceptions (Kastanakis and Voyer 2014), which in turn leads to differences in attitudes and behaviours towards different objects (Murray and Schaller 2016). The quality of human–computer interaction is based on the user's satisfaction, which is based upon what is seen, perceived and interpreted (Lee et al. 2015). The consequence of this is that the process of designing a suitable user interface able to satisfy users from a particular culture requires an intimate understanding of the rules of perception within that culture (Johnson et al. 2014). Perception involves the use of senses to detect information, which in turn allows the detection of good or bad designs (Lidwell et al. 2010). In essence, developers should help their target users achieve their goals more easily, effectively, and efficiently. This means that an interface should act as an extension of the user rather than the designer, which requires the interface to facilitate ease of learning while avoiding anything that causes frustration (Galitz 2007).

When interacting with a user interface, individuals must be able to process information, solve problems, make decisions and then react meaningfully to data (Endsley 2016).

Therefore, when designing an interface to suit users' needs, developers should endeavour to understand the characteristics of their users (Gibbs and Bernas 2015). It is essential to note that modern users of computers and electronic devices are accustomed to a certain level of sophistication and visual appeal in human–computer interfaces (Tractinsky 2004). However, a great deal of difference still exists in terms of the aims, perspectives and technical abilities of designers in comparison to those of end users (Aykin 2016). For example, before designing the user interface, developers should understand and consider the needs and cultural preferences of users (Marenkov et al. 2016), thus developing the user interface accordingly to meet the exact requirements of the end user (Marcus 2001). The end user should have reasonable expectations of the most probable computer responses to their input, enabling them to focus on what they want to get out of the experience without distractions from inappropriateness or inelegance in the interface design (Smith 2016). In other words, the user interface should feel effortless to use, with the design enabling the user experience to flow naturally and comfortably (Oshan et al. 2007).

However, these findings were based on general user interfaces, which includes websites. Therefore, whether these findings could be generalized when it comes to Facebook's user interface is still unclear from the literature. The focus of this research is on Saudi Arabians. Arabs generally prefer to interact with visual stimuli, to view and focus on objects and to look at their contexts and the relationships between them. This is considered holistic-dialectical thinking (Rau et al. 2015). In contrast, Western culture is generally more analytical and independent, tending to focus on the attributes of an object separately from the context (Nisbett and Miyamoto 2005; Jaeshik 2016). This is one important way in which entire groups of cultures may differ in terms of perception. Therefore, for designers to properly understand their target audience, it is imperative that they understand the particular limitations of the visual perception those users have during their interactions with the user interface (Hermeking 2016). Therefore, this research focuses on the translated text written in the Arabic version of Facebook and analyses the Saudi Arabian view on the written content to better suit their understanding.

2.4 Design Approaches

One should bear in mind that a user interface design such as Facebook should be devised to fulfil the users' needs and desires. It is possible that designers aren't familiar with the users' needs before designing a user interface. Nonetheless, even when designers try to evaluate the users' needs, they tend to interpret the outcome in a subjective manner. Therefore, this research will analyse the Saudi Arabian perspective on Facebook's current design and try to develop a set of design guidelines for the designers to incorporate when designing the user interface to suit Saudi culture.

There is a wide variety of design approaches. The general outline of a design process consists of an initial idea that, through prototyping, evolves into a finalized design (Hollnagel 2014). During the designing process, designers should be given space and freedom to make any necessary modifications (i.e. goals and constraints), while clients should clarify the functions and requirements of the design product (Cross 2007). If users' perspectives are misunderstood, designers may fail to satisfy the specific user requirements (Wilkinson and De Angeli 2014). Among users and designers, differences exist regarding the perceptions of a system. The design process should be based upon the users' perceptions, not the designers' (Battini et al. 2011; Hsu, Chuang and Chang 2000).

This research deals with the design process and tries to highlight the importance of the "fuzzy front end" design approach in which designers focus on users' needs and perspectives (Sanders and Stappers 2008). Unfortunately, the design process is rarely based on the users' perspectives, while great attention is given to technical function and reliability (Sun et al. 2013). Therefore, this research considered understanding the Saudis' perception towards Facebook's design to help Facebook developers design the Arabic user interface to suit Saudi users.

Increasing the involvement of the end users during a system's development is an important aspect (Ferre and Medinilla 2007), as it is vital for creating more efficient, effective, and safe systems (Kahraman 2010). Furthermore, this in turn puts the main focus of the design research on the users' needs (Zhang and Dong 2009).

Therefore, the need to address the aforementioned issues has led to an increasing demand to apply the concept of Human-Centred Design (HCD), which is widely

recognised as a leading factor to improve the ease of use and performance of the system, as the designing process is mainly focused on the improvement of its users' experience (Costabile 2000). HCD is based on the identification of three main aspects: (1) Who are the representative users; (2) what is the representative task; (3) and what are the most possible/probable problems that the users might face while using the system (Scholtzk 2004)? The term "user experience" has been described as "a person's perceptions and responses that result from the use or anticipated use of a product, system, or service" (ISO 9241- 210). User experience is greatly affected by three factors—the system, the user and the user's features, and the context of using the technology or system.

2.4.1 User-Centred and Participatory Design

This research focuses on both user-centred and participatory design, the latter of which is an approach that refers to several design processes in which end users influence how they prefer the interface design to appear. There is a great range of ways and methods to get the users involved in the user-centred design, but the main aspect is that users are inevitably involved. The end-user-orientated approach is one in which the needs, requirements, problems and visions of the end user are taken into consideration at each step during the design process. User-centred design is considered to be a multi-stage problem that requires designers to not only take into consideration the preferences of the end users but also test in a real-world context that their assumptions meet the reality. It aims to help create interfaces that are useable, efficient, and accessible to the majority of users within the framework of the design constraints (Keates and Clarkson 2003).

Participatory design (PD) is a terminology used to describe a set of theories, practices and research that actively involve the end users during the design process of the user interface design (Greenbaum and Kyng 1991; Muller and Kuhn 1993; Schuler and Namioka 1993). As this research focuses on the users' perceptions towards the Arabic version of Facebook, PD is considered to be a maturing field of research that involves actively including the users in the design and development process of an interface system (Kensing and Blomberg 1998). In these systems, users are considered to be co-designers (Abrams et al. 2004). PD focuses on system development by merging the perspectives of both designers and users to create a common visualization for the contexts of the user interface (Fischer and Ostwald 2002).

Therefore, this research follows the PD, the active involvement of participants and end users in the design process, which takes place through continuous feedback gathering during several steps, such as requirements gathering, prototype development, implementation, and evaluation (Sharma et al. 2008). PD is an approach that aims to increase awareness around the end users' real needs and requirements and also to develop more appropriate and user-friendly products or services (Muller 2002). Therefore, this continuous feedback from the designers and users should, ideally, be done when localizing a user interface to suit users (Lindgaard et al. 2006). By following the participatory design approach, the following sections discuss more about the theoretical lens for this research.

2.5 Localization Factors with current Facebook to fit Saudi Arabia

There are three different theoretical aspects that can be used to better understand the requirements that are involved in the localization of Facebook: the cultural context, the language context, and Hofstede's cultural dimensions (see Figure 6).

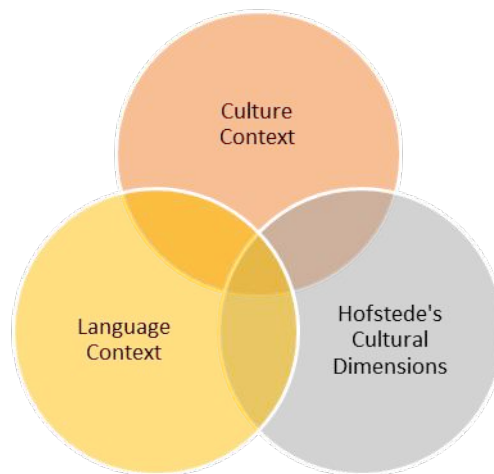


Figure 6 Theoretical lens for this research

Cultural Factors

This section discusses the perspectives of what cultural anthropologists have termed “culture” by providing a general investigation into the influence of cultural variables on user interface perception and preferences in social media, with particular emphasis on Facebook. Research has explored the development of human minds and the way in which individuals interact with tools (Kronenfeld 2008), which makes this a highly relevant area in the context of examining Facebook as a tool.

The discipline of social science has two main definitions of culture: the particular way of life that a person follows, including the ideas, ideals, customs, and traditions that shape their society; and the material artefacts, such as art or tools, that they produce (Benaida 2014). Culture can also be perceived as the involvement of collective values and systems that allow one social group to differ from another (Hofstede 2001). As a result, significant differences often exist between cultures, such as the particular interpretation given to symbols, icons and words (Ford 2005).

When the designer's culture differs from that of the user, there can be unintended consequences that impact the user (Chai et al. 2015; Baxter 2015). The first example of this relates to the graphics used for icons and buttons. Culture can affect the way that images are perceived, with different perspectives making the same image comfortable/normal or embarrassing/strange. Additionally, images that are appropriate for one culture may not be appropriate for another due to inherent differences in each culture's interpretation (Matsumoto and Juang 2016). Therefore, when considering the design of a user interface by people from a different culture, it would not be sufficient to focus solely on the text's translation (Alsaif 2014).

As the context of the current research is Saudi Arabia, there are certain cultural aspects that should be explicitly considered. Firstly, Saudi Arabia is a high-context culture (Al-Olayan and Karande 2000), which is different from the low-context culture in which Facebook was developed, i.e. the US (Yang 2016). Secondly, the Hofstede cultural dimensions in Saudi Arabia are significantly different from the Western dimensions (Duran et al. 2016) which shaped the development of Facebook (see section 2.4.1.2). Since it is believed that cultural context (Doole and Lowe 2008) and cultural dimensions (Hofstede 2001) have an impact on the design of interfaces, discrepancies may exist between the preferences of Saudi users who are living in Western cultures (even temporarily) and the preferences of those who are living in Saudi Arabia. Therefore, this research analyses the Saudi perception according to the Hofstede dimension and the cultural context. The following section details how and why variations in cultural context and cultural dimensions typically affect users' preferences. Nevertheless, none of these studies has covered Arab or Saudi users in the context of social media.

2.5.1.1 Cultural context

The text used in interfaces is highly dependent on cultural and regional context. This makes it essential to consider not only the mere correctness of the translation of a given piece of text but also the style and tone of the aspects in the specific cultural context (Bargas-Avila and Bruehlmann 2016).

Cultures can be categorised with regard to their requirements for context in relation to language use (Johnston et al. 2014). The varying degree to which a culture is low- or high-context can be instrumental in determining how individuals from that culture perceive and accept the language utilised in a given user interface design (Doole and Lowe 2008). Figure 7 illustrates the differences between several example countries with regard to these variables. These differences between cultures are intricately connected to how much the writers or speakers from a particular culture have to depend on words to express meaning (Khan and Alhusseini 2015). For instance, Western cultures use fewer words to express meanings than Japanese and Arab cultures because Japanese and Arabic languages have single words that are used for multiple different meanings; English, however, is influenced by Latin, which has words with more precise meanings (Doole and Lowe 2008). It is therefore prudent for designers to recognise the differences between each country/culture because this can help them to understand the relationship between a culture and their linguistic requirements (Khan and Alhusseini 2015).

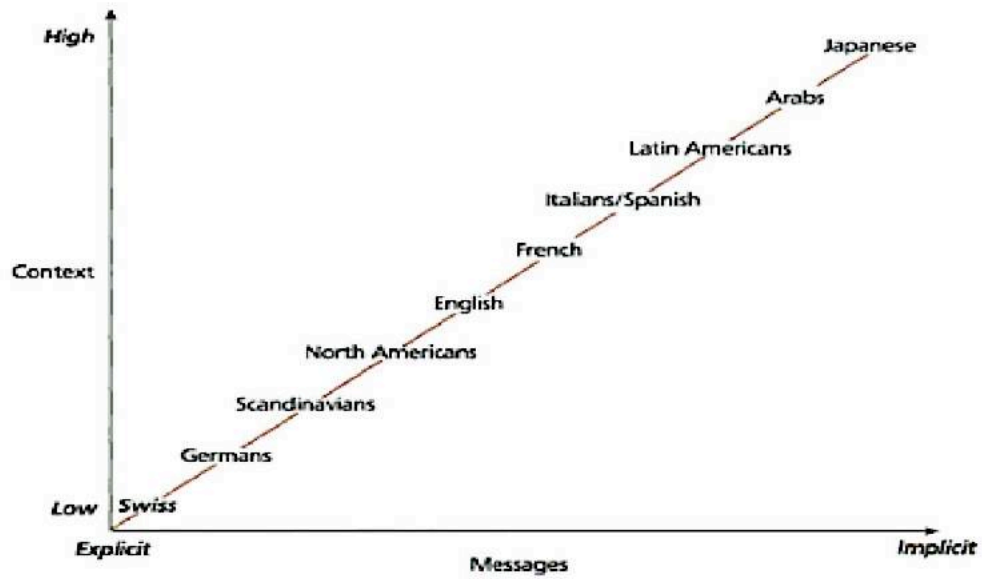


Figure 7 Cultural context differences (Doole and Lowe 2008)

Low-context cultures need only focus on words to determine meaning, because each word always means the same thing. In contrast, high-context cultures need to take into account the context in which a word is used to determine meaning, because one word can have a variety of meanings depending on how it is used (Dowty 2012). The implication of this difference from a design perspective is that the labelling of icons should take into account the linguistic cultural context of users. In English, where the language is clear and unambiguous, the labels for icons can be simple and brief. However, high-context cultures, like Arabic countries, will need clear labelling to ensure that no misunderstanding occurs due to the multiple meanings of many words. Thus, it is proposed that the current words used in the labelling icons and hyperlinks on Facebook are putting Saudi users under pressure due to the users' inability to derive a clear meaning from the translated Arabic words.

2.5.1.2 Hofstede's Cultural Model

To make it easier to understand the complexity of the concept of culture, a number of cultural models have been created. These models all seek to provide a useful, coherent definition of what culture means (Oshlyansky et al. 2007). Geert Hofstede is one of the preeminent experts on the interactions between organisational cultures and national cultures. Though Hofstede developed his model by studying the IBM Corporation and gathering data from interviews with 120 employees in 53 countries (Hofstede et al. 2010), the resultant cultural dimensions are also applicable in non-organisational

contexts (Hofstede 2001). Hofstede’s cultural model is extremely popular in human-computer interaction research, as it has been used by many studies to measure the effect of culture on user interface design (Khaddam 2014). This cultural model will therefore be used as the theoretical foundation for this study, as previous researchers have also used this approach.

Hofstede measured the ways in which people act, feel and think. This enabled the development of a five-dimension set of design guidelines for examining cultures (Hofstede 2012), as well as a comparison between them by means of a scaled rating. Reinecke et al. (2010) illustrate how user model aspects, such as country (Hofstede’s culture dimension), require different interface designs for different cultural aspects (see Table 6).

User model aspect	User interface
Country & nationality (Hofstede culture dimension)	<ul style="list-style-type: none"> • Variable complexity/information density • Different levels of hierarchy in the presentation of information • Non-linear navigation versus linear navigation with instructions • Objects in focus versus objects embedded in context • Different levels of content structuring • Different colour schemes: colourfulness, brightness and contrast • Different levels of support • Variable levels of navigational cues • Number of images presented • Representative versus explanatory images

Table 6 Requirements for adaptable interface aspects in the culture model (Reinecke et al. 2010)

The five dimensions are Power Distance, Individualism vs. Collectivism, Masculinity vs. Femininity, Uncertainty Avoidance, and Long and Short-Term Orientations (Rambo 2013). Numerous studies have suggested that there are differences in culture with regard to cognitive processes, which suggests that designers ought to heed these differences (Fiske and Taylor 2013).

Power Distance: This is the degree to which less powerful members of a culture expect and accept the unequal distribution of power within that group (Hofstede 2012). When a culture scores high in this category, it indicates a belief that individuals in a society are unequal, with these inequalities being influenced by the perceptions of the particular culture (Rambo 2013). The power structure in an organisation or culture can reflect underlying inequalities, centralized power, unfair distribution of work, and even the autocratic nature of the leaders (Hofstede 2012).

Individualism vs. Collectivism: Individualism is used to describe cultures in which the ties between individuals are loose, with each person only being expected to address the needs of themselves and their immediate family. In contrast, collectivism denotes environments that stress the integration of individuals into strongly cohesive groups, in which individuals can expect lifelong protection from the group in exchange for unquestioning loyalty. Effectively, this dimension describes the degree of interdependence between the members of a particular group and is concerned with the self-image of the group in terms of “We or I” (Hofstede 2012).

Masculinity vs. Femininity: Cultures that score highly on this dimension are considered to be more masculine. In effect, this means that they are more likely to be motivated by the stereotypically masculine values of competition, determination and success. In contrast, cultures that have a low score are considered to be feminine, indicating that quality of life and caring for others are the dominant values. In a feminine society, success is measured in terms of quality of life rather than through competitive achievement over others (Hofstede 2012).

Uncertainty Avoidance: This is the extent to which a member of a culture feels threatened by uncertainty. Cultures that score highly on this dimension are founded on beliefs and will create institutions that seek to avoid ambiguous situations (Hofstede 2012). High levels of uncertainty avoidance denote rules that are based on emotions, with people tending to work hard and place emphasis on punctuality, precision, and security rather than innovation (Hofstede 2012).

Long and Short-Term Orientation: This dimension deals with the differences between short-term pragmatism and the long-term search for an ideal or virtuous outcome. Those cultures that score highly on this dimension are long-term oriented, indicating a focus on the future; low scores denote short-term oriented cultures that are focused more on the present or past (Hofstede 2012).

[Cultural Dimensions Saudi Arabia versus USA](#)

Rambo (2013) rates the Saudi Arabian culture as high in power distance, collectivism, masculinity, long-term orientation, and uncertainty avoidance. In accordance with Hofstede’s model, this classification designates Saudi Arabia as an Eastern culture and places it almost completely opposite of traditional Western culture (Hofstede 2012).

Figure 8 highlights some of the key differences between the US and Saudi Arabia in terms of Hofstede's cultural dimensions.

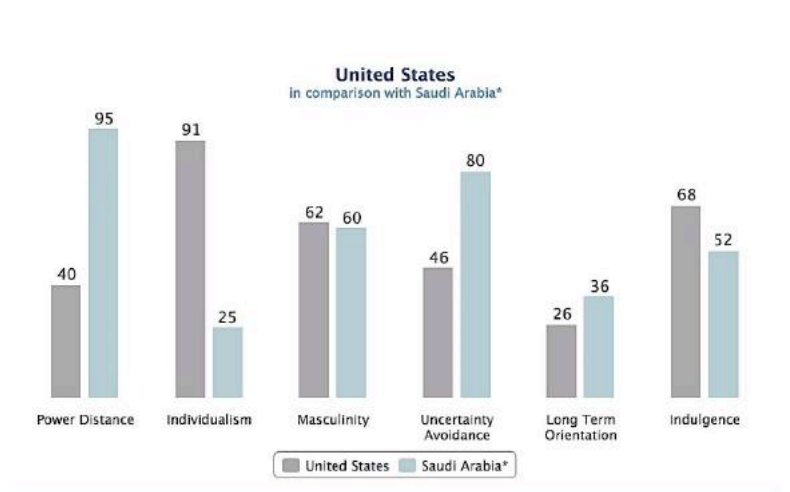


Figure 8 Comparison between Saudi Arabia and the US (Greet-hofstede.com 2015)

It should also be noted that the cultural dimensions of those who are living abroad are affected by the exposure to cultures with different dimensions (Crowne 2013). Even individuals who have travelled outside their native country have shown changes in their cultural perspectives (Banks 2015). Thus, if cultural differences have implications for the design preferences of Facebook, it is proposed that those who are living abroad will be less likely to have complaints against the Facebook design, especially those who are using the English version. On the other hand, as mentioned above in section 2.4.1, those who are living in Saudi Arabia and using the Arabic version can be expected to have a more negative view of Facebook due to differences between the culture in which Facebook was originally designed and the cultural dimensions of Saudi Arabia.

Cultural Dimensions and their impacts on the design of user interface

People from different cultures often prefer certain elements to be designed in specific ways (Reinecke and Bernstein 2013). Therefore, knowledge of cultural models and the implications that these have for adaptations related to user preferences may be highly useful in guiding the design of a user interface to better accommodate the cultural preferences of target users (Khan et al. 2016). Many researchers have used Hofstede's dimensions to compare the differences between countries with high and low scores in each of the different sections. For example, Katuk and Zakaria (2015) used Hofstede's

dimensions to examine the preference for linear or nonlinear navigation styles in different cultures.

Table 7 highlights how different cultural dimensions have impacts on different interface designs. The cultural dimensions are outlined in more detail along with the design preferences that previous research has developed in terms of the specific implications of these cultural dimensions for the layout design. The following components are retrieved from Reinecke and Bernstein (2013 pp.427-453), who conducted the following elements stating, “The list is not replicable in all user interfaces but they provide tangible hints about what a user might like and dislike”.

Hofstede dimension	Eastern culture	Western culture	Reference
Power distance	Highly structured access to information	Unstructured information	Ford and Kotzé 2005
	Linear navigation, few links	Different access and navigation; nonlinear	Burgmann et al. 2006;(Marcus and Gould 2000
	Little information on first level	Most information at first level	Burgmann et al. 2006; Marcus and Gould 2000
Uncertainty avoidance	Simplicity with clear metaphors, limited choices, and restricted amounts of data	Encourage user exploration; provide many menu options	Hoehle et al. 2015 Hofstede 1980; Fang et al. 2011
	Minimal menu options, simple navigation structure	Complex interfaces	Burgmann et al. 2006 Cha et al. 2005; Hofeman Cher et al. 2005
	Strict in structure and procedures Show position of user	Open to change, have a willingness to take risks, and are tolerant of unstructured situations	Santos et al 2010; Wells et al. 2011; Fang et al. 2011; Marcus and Gould 2000; Burgmann et al. 2006; Marcus 2000
	Simple and descriptive help facilities Focus on preventing users from getting lost Colours, sounds and images should be used to reinforce the messages	Menu options and use of colours, sounds and images to provide additional information	Marcus 2002; Ford and Kotzé 2005

Table 7 Hofstede’s cultural dimensions and user interface design (Reinecke 2013)

As illustrated above, cultures that score highly on the power distance dimension, such as Eastern cultures, typically prefer linear navigation, fewer links, highly organised and structured data and less functionality information in a user interface. This contrasts with

Western cultures, which have lower scores on this dimension and typically prefer nonlinear navigation that offers different navigation possibilities and a wide range of functionalities. This suggests that because Saudi Arabia scores high in power distance, a localized design of Facebook may benefit from having more linear navigation and fewer links. In other words, Facebook's current format, with its crowded pages, may evoke feelings of confusion and stress because of the simultaneous exposure to a large number of options.

Cultures that score high on the uncertainty avoidance dimension, such as many Eastern cultures, tend to prefer information to be displayed hierarchically on the page. They also prefer the use of icons that are familiar to their understanding. Western cultures score low on the uncertainty avoidance dimension and prefer more information with complex interfaces, potentially including unusual references and ambiguity with implicit structures and a high degree of complexity (Khanum et al. 2012; Khan and Alhousseini 2015). The majority of Eastern cultures, with the notable exception of China, tend to prefer simple, clear and limited navigation choices with "binary logic and consistent imagery and terminology" (Fang and Holsapple 2011). In contrast, Western societies seem to be more tolerant of implicit structures or complexity with more varied, ambiguous and less constant imagery and terminology (Marcus 2001; Khanum et al. (2012). This implies that because Saudi Arabians are people with high uncertainty avoidance, any image that does not have a clear meaning should be eliminated from icons, because it may not convey the same meaning in all cultures (Samovar et al. 2015). Furthermore, it is proposed that perceptions of complexity will be higher for Saudi people because they tend to be risk-averse and therefore uninterested in navigating complicated pages.

In summary, users feel more comfortable if they interact with online elements that are related to their cultural norms (Reinecke 2010). Therefore, this research considers the design conclusions that were drawn by Reiencke (2013) in Table 2–7 when using Hofstede's cultural dimensions and user interface design. The current research focuses on the Saudi culture and the Arabic version of Facebook's user interface design. Therefore, the following section outlines and discusses the extant literature with regard to design in the context of Saudi Arabia. This section focuses on an examination of the key cultural differences that likely exist between the designers of Facebook and Saudi

users, with particular emphasis on how these differences impact the Saudi perception of the program.

Language and translation

The focus of this research is to localize the Arabic Facebook user interface to better suit Saudi culture. The process of localizing the user interface involves a number of important considerations. It has been argued that language is typically one of the more difficult factors, given the potential complexity of the target text and the availability and skill of translators. Some of the most difficult languages to translate from English are Arabic, Japanese, Chinese and Russian; the easiest are Spanish, French, Italian and German, due to the fact that they share the same alphabet and certain linguistic paths (Yunker 2013).

Beyond direct translation, text also needs to be formatted appropriately, such as the culture-appropriate presentation of dates, time zones, currencies, or reading direction (Del Galdo 1996). After investigating the differences in layout between native and translated text in a user interface, Shaw (2005) concluded that the key variations were those that involve text formatting and text display. This is especially important when translating from one language to another, as visual differences could lead to major problems in the interface due to differences in text length. This can be exacerbated by text-stretching techniques that can alter the space required by the user interface controls which incorporate text (Yunker 2013). This can be seen in the case of Arabic language, which has 28 letters written in a cursive style (Ramadan 2011). Arabic words tend to occupy more horizontal space than English, and Arabic fonts usually appear four points larger than the English equivalent (Alsumait et al. 2009). Therefore, effective translation requires an understanding of the language orientation and its structure to ensure that sufficient space is allocated in the user interface. This is especially true when translating languages that differ in structure to a large extent, such as English and Arabic (Marcus 2001). To avoid confusion, translation from English to Arabic should also be a very careful process, because a single word in English may require a whole sentence in Arabic (Abu-Rabia and Taha 2016).

It is also important to consider the viability of word-for-word translation, especially when there are dramatic differences in grammatical structure (Munday 2016), as is the case with English and Arabic. As an example of this, the Arabic word for female camel

is “*Nagah*”, whereas English uses the same word for both the male and female animal. This kind of difference can lead to the incorrect choice of vocabulary, which may cause both grammatical and translation errors (Shneiderman 2010). This is particularly likely when the native language of the designer is not the same as the native language of the consumer (Shneiderman 2010). Therefore, when Facebook translates its user interface design from English to Arabic, designers need to consider the language’s context, grammar and sentence structure.

2.5.1.3 Writing orientation

Text orientation varies depending on the language. As this research focuses on the translation version of Facebook, the text orientation needs to be considered. There are three types of text orientation: left to right, right to left and top to bottom. The Latin, Cyrillic, Greek, Thai and Indic languages are written from left to right (Naqvi et al. 2014); the Chinese, Japanese and Korean languages use either left to right or vertical text; and Arabic text is written from right to left (Rambo 2013).

Studies have demonstrated that a person’s reading style influences their focus point and reading orientation (Chan and Bergen 2005). This means that native Arabic speakers tend to be more focused on the right-hand-side elements, whereas speakers of Latin-oriented languages are more focused on left-hand side elements (Al-Badi and Mayhew 2010). In other words, Arabic users start looking at things from the right-hand side, which influences their expectations about the visual attention. This contradicts the design of websites by native speakers of Western languages who will typically situate important elements on the left, which then confuses Arabic speakers (Reinecke and Bernstein 2013). Therefore, this research analyses how Saudis’ reading and writing orientation affects their navigation and interaction with the Arabic Facebook’s user interface design. Ultimately, when designing a user interface, the layout design needs to suit the text orientation to eliminate confusion and avoid navigation issues.

2.6 Theories to understand users’ perceptions and behaviours

The primary aim of this research is to develop a set of design guidelines for understanding the implications of the current Arabic Facebook user interface in response to the specific culture and language of Saudi Arabian users so that its design can be improved. For the purpose of understanding this area of interest, a wide range of

modern theories and frameworks have been established. The theory of reasoned action (TRA) by Ajzen and Fishbein (1991) is considered to be one of most significant theories because it has the basic role in the research discipline of technology acceptance. In social media context, this theory has been modified into the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB). Many of the technology acceptance models, technology preference models and innovation dissemination models have supported these approaches. Resultantly, many efforts regarding the development of an all-inclusive, comprehensive and unified model have been made that incorporate all the constructs into one consistent model; one of the best acknowledged attempts is from Venkatesh et al. (2003), who proposed the Unified Theory of Adoption and Use of Technology (UTAUT).

As a theoretical model, TAM can be utilised to best anticipate and describe users' behaviours and attitudes regarding the use of information technology (Legris, et al. 2003). The considerable importance and value of this model can be understood by its contribution to comprehend how it provides the fundamental point that can help trace the way users' external variables impact purpose of use, acceptance or belief (King and He 2006). Perceived ease of use and perceived usefulness were the two intellectual views on which the TAM was established. The root of the model is providing other factors to impact belief, behaviour, and purpose of use. TAM has influenced users' attitudes and behavioural intentions either directly or indirectly in demand to measure the users' actual use of the technology.

The critical review of TAM shows that it is necessary to add other determinants for the purpose of giving an extensive interpretation and well-descriptive design for technology acceptance on the basis of this research (Martínez-Ruiz 2016). As TAM has been developed and instigated in work environments mainly focusing on the variables relevant to job performance, it appears reasonable to take into account the affecting variables that could provide assistance to accept the new, advanced technologies in a more supportive manner; for instance, in the context that permits the interaction of users with the user interface (Van Der Heijden 2004; Abad et al. 2010). In addition, elements linked to social and human transformation procedures should also be incorporated. The literature specifies that the TAM (Davis 1989), the extended Technology Acceptance Model (TAM2) (Venkatesh and Davis 2000) and the Unified Theory of Acceptance and

Use of Technology (UTAUT) (Venkatesh et al.) are used to clarify potential acceptance patterns and implementation of technologies between users. In all the aforementioned models, concepts such as complication, comparative advantage, professed risk, biased standards and norms, complexity, perceived expediency and usefulness, compatibility, anticipated easiness and observability of use play a crucial role in these methods.

Furthermore, one's behaviours and attitudes are influenced by additional components such as social impact or social values. Social values explain how specific behaviours are related to significant individuals in one's life (Martínez-Ruiz 2016). There are many relationships in one's direct reference groups, including family, peers and friends. The people who use Facebook are encouraged to interconnect with the people whom they are linked to in real life, such as family, friends, and colleagues, to socialize (Martínez-Ruiz 2016). The influence of social standards on intentions has remained a blend that fluctuates from no direct impact to a strong direct impact (Krueger et al. 2000).

TAM has defined a number of major factors that help to decide the level of recognition and acceptance of technology (Venkatesh and Davis, 2000). Van Bon et al. (2010) have further added two major factors to the TAM to enhance its prognostic and analytical power by taking into account the factors' importance in affecting users' behaviours and attitudes regarding the introduced technology, innovation and their potential to use this technology (Davis, Bagozzi and Warshaw 1989).

The UTAUT is the innovative model regarding users' acceptance of technology that was framed by Venkatesh et al. in 2003. This model has been utilised by many analytical and explorative studies into the acceptance and implementation of novel advanced technologies (Morris, Davis and Davis, 2003). It is usually considered to be a stronger and more effective model compared to the similar contexts and theories because it provides a variation of 70% in the intent of use. The UTAUT comprises the factors of expectation regarding performance, social influence and expectation regarding effort (Venkatesh et al., 2003). These factors are the combination of acknowledged and analysed effectiveness of a specific concept (Davis, 1989), the competitive advantage that is offered by the advanced technology (Moore and Benbasat, 1991), the particular expectations that can be held by users regarding the results (Compeau and Higgins, 1995, Compeau et al., 1999), any dedication and inspiration linked to the external rewards (Davis et al., 1992), the extent to which it is suitable to

the envisioned task or usage (Thompson et al., 1991) and all other conditions that facilitate and provide assistance (Venkatesh et al., 2003).

The UTAUT model has been utilised by Chen and Shih (2014) to evaluate the acceptance model of an item holding advanced technology and innovation. It was validated by these studies that the acceptance of a particular social media website is directly proportional to the ease of usage in regards to platforms like Facebook; in the cases when issues appear in the usage, the acceptance eventually declines with these problems.

As this research focuses on Saudi Arabia's cultural effect on the acceptance of social media, the use of the theoretical model stated above would help this research understand the users' perspective when it comes to interacting with Facebook user interface design. Previous research has used the theoretical model for a wide range of applications. These applications include the study of acceptance across cultures (Evers and Day 1997); the perceived ease of use and usefulness of social media along with the measurement of users' perceptions and intentions (Hsue and Lin 2008); the measurement of virtual communities' ability to modernize social ties (Hossain and de Saliva 2009); the examination of users' intentions on blogs (Steyn et al. 2010); and the examination of consumers' intentions with regard to the products and advice of an online travel community (Casalo et al. 2011). Previous research has used TAM on Saudi Arabian users to measure their perceptions and behaviours with regard to social media use. In this way, Al-ghaith (2015) showed that "participation intention" is significantly and positively related to 'participation behaviour' when using social media.

While our initial objective was to understand Saudi Arabian users' attitudes and behaviours towards Facebook, our outcomes make a significant contribution in discovering support for a direct relationship between domain-specific standards and cooperative behaviour. The influence of intentions on actual behaviour with reference to online networking sites is further verified by Rauniar et al. (2014). In particular, researchers (Rauniar et al. 2014) declared that the extent of social media usage depends on individuals' purposes for using those sites.

Indeed, Lazard and Mackert (2014, p. 726) defined simplicity in design, as the "display of limited colours, concise content, and limited technical functionality, can directly increase the perceived ease of use and perceived usefulness, as shown in usability

studies”. Akram and Albalawi (2016) used TAM to study the perceived connectedness, perceived enjoyment, perceived usefulness and perceived ease of use as the major influences for the adaptation of social media. They found that perceived connectedness and perceived enjoyment motivate the adoption of social media. Connectedness, enjoyment and the corresponding level of adoption are in turn mediated by the perceived ease of use and usefulness of each program (Akram and Albalawi 2016).

However, in most of the studies conducted on social media, some important external variables have been ignored; thus, this research tries to incorporate a collection of external quality factors and examine their effects on Saudi Arabians and their acceptance of Facebook’s user interface based on the technology acceptance model. Despite the breadth of literature, no study has been published on the way in which design considerations regarding the cultural factors of one country affect the usage of Facebook in a different country. Therefore, the current study seeks to address this gap in the literature.

2.7 Research on conceptual Framework

In this chapter, a conceptual framework that includes two factors (culture and language) is introduced. A discussion is provided of cultural factors, such as context, cultural dimensions and the misalignment of the designer’s culture and users’ culture. The discussion then moves on to the language factor, including an examination of text orientation, numbers and language structure. These language factors have been shown to impact the users when interacting with the user interface. The conceptual framework arising from the discussion of these two factors leads to an understanding of the perception of and attitude towards the design of social media, which in turn leads to the understanding of differences in behaviours and intentions when using these kinds of programs (See Figure 9).

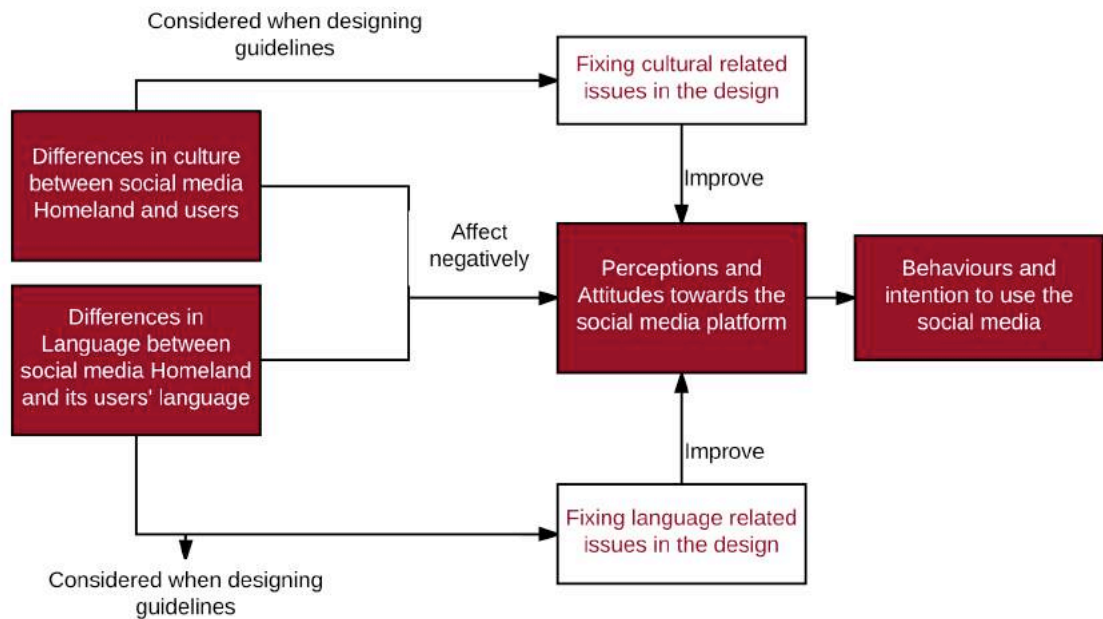


Figure 9 Research conceptual framework

2.8 Chapter Summary and Knowledge Gaps

Facebook is a social media application that was launched in 2004. Initially designed to target users in the US, Facebook was subsequently translated into many languages. Once it was translated into Arabic, it became the top social media application in Saudi Arabia. However, despite the existence of an Arabic version of the platform, some Saudis prefer the English version.

Given the degree to which perception and understanding is influenced by an individual's culture and experience, the design should be informed by using the participatory and user-centred design methods to best gain the users' input and help designers understand the users' needs and requirements. Also, the use of technology acceptance theories is recommended to ensure that the adoption and usage of social media is clear and simple. This approach affects users' perceptions and attitudes, which helps to ensure that they have a positive experience of using social media, especially regarding important aspects of the program, such as the settings page. This research therefore attempts to better understand the cultural and language factors at play in the Saudi social media environment and to examine the effects of interacting with non-localized interfaces. Developing Facebook's user interface design to specifically suit Saudi Arabian users requires the issues between internationalisation and localization to be addressed. This involves the consideration of such factors as whether Facebook

should use the same design as the English version with translated interfaces (i.e. internationalisation), or whether it should be customised to fit the cultural preferences of Saudi Arabia (i.e. localization). The extant literature, such as Human Computer Interaction theories, show that levels of user interface acceptance are highly affected by culture. To date, however, no study has been conducted on this subject in the context of Saudi Arabia. This research therefore comprises the first study of design paradigms such as participatory design and user-centred design to gain users' input when it comes to localizing the Arabic version of Facebook. In addition, though the validity of Hofstede's cultural dimensions have been proven in the understanding of user preferences, this study provides the first application of the theoretical design guidelines in the Arabic context.

This chapter shows that Arabic constitutes a particularly serious challenge for localization due to the profound differences between Arabic and many Western languages. As an example of this, Arabic language uses one word with different meanings in different contexts (homonyms), meaning that Arabic sentences tend to be more detailed and longer to avoid confusion. It is therefore proposed that user interface design in the Arabic context requires more detailed image design and labelling of icons instead of the more abstract approach that is commonly used. In summary, the challenges involved in introducing or broadening the appeal of Facebook in Arabic countries are not limited to translation issues. This chapter also shows that there is a range of cultural factors to consider, such as the meanings of symbols and pictures, the use of labels, navigation preferences, and page complexity levels. The current study is the first to investigate these factors in the context of user interface design in Arabic culture. Through better understanding of these considerations, it may be possible to propose a new set of guidelines for the design of a Facebook interface that offers improved usability and usefulness to Arabic users.

The next chapter discusses the methodology that is employed to analyse the way in which Saudi participants use the Arabic version of Facebook. This includes a discussion of the particular issues and challenges involved in investigating the current design of Facebook in the Saudi Arabian context.

CHAPTER 3: METHODOLOGY CHAPTER

3.1 Introduction

This chapter presents the rationale for the chosen research approach used in this thesis. This research adopted a multitool approach. First, interviews were conducted to discover users' perceptions, attitudes and behaviours towards the various elements of Facebook's user interface. To explore these discoveries in more detail, the interviews were followed up by two consequent surveys by means of structured questionnaires.

In this chapter, an outline is provided of the research philosophy, methods, and strategies that were utilised to explore and investigate the attitudes and behaviours of Facebook users in Saudi Arabia. The desired end result of this investigation is the development of a set of viable design guidelines to improve Saudis' perception towards the Arabic version of the Facebook interface design. This chapter begins by setting out the research's ontological, epistemological and axiological foundations. The research strategy that is based upon these philosophical foundations is then discussed. The structure of this chapter can be seen in Figure 10. After defining the research strategy, the analytic techniques used in this research are presented, followed by a discussion of important ethical considerations.

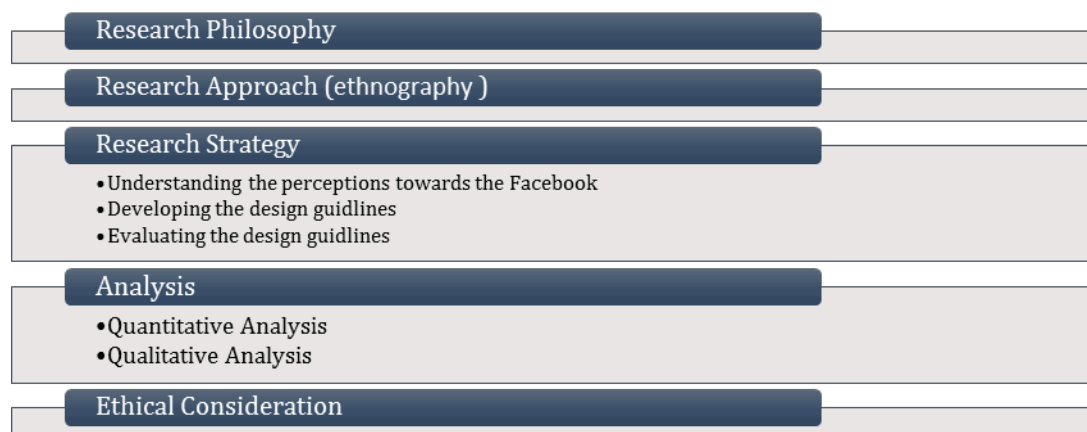


Figure 10 Structure of the Methodology Chapter

3.2 Research Philosophy

The aim of this research is to understand how culture and language affect the perceptions and behaviours of Saudi users with regard to the Facebook user interface.

There are three main philosophies that can be used to approach the research question for this thesis. The research approach in the current study was based on understanding the reality in its context (i.e. the chosen epistemology is the social construction of reality). This is based on the assumption that the study participants already know the answer to the questions, with reality being subjective and individualised (i.e. the chosen ontology is that of internal reality). The research philosophy used in this study seeks to gain an understanding of participants' opinions, which are accepted as factually albeit subjectively true.

Epistemology can be defined as “a set of imminent rules used in thought by large groups of people to define reality” (Auerswald 1985, p. 1). There are two major factors in epistemology: positivism and interpretivism (Furlong and Marsh 2010). Positivism is based on developing hypotheses to test during the research process (Dudovskiy 2011). Positivistic research tends to examine factors rather than exploring and understanding the factors (Kaboub 2008). As a result, positivist research is clearly structured due to the research problem being well defined from the beginning (Tashakkori and Teddlie 2003) and because of the aim of positivist research being to test a set of propositions or hypotheses to explain a phenomenon (Lachmann et al. 2016). Since this study is the first to be conducted in Saudi Arabia for understanding users' perspectives towards Facebook, it could not adopt the positivistic approach, as propositions could not be developed from literature.

To ensure comprehension during the investigation of this phenomenon, a social constructionism interpretive paradigm is adopted. Interpretivism is based on the idea that the knowledge acquired in a discipline is socially constructed rather than objectively determined (Carson et al. 2001). Interpretivists avoid rigid structural design guidelines, such as those used in positivist research; instead, they adopt research structures that are typically more personal and flexible (Carson et al. 2001). These are more receptive to capturing meanings in human interaction (Blackmon et al. 2005) and making sense of what is perceived as reality (Carson et al. 2001). Table 8 illustrates the key differences between positivism and social constructionism (interpretivism). Therefore, this research follows the interpretivist paradigm for the development of design guidelines to help understand Saudi users' perspectives and experiences with the Facebook design elements.

	Positivism	Social constructionism (interpretivism)
The observer	Must be independent	Is part of what is being observed
Human interests	Should be irrelevant	Are the main drivers
Explanations	Must demonstrate causality	Aim to increase the general understanding of the situation
Research progress conducted through	Hypotheses and deductions	Gathering the right data from which ideas are introduced
Concepts	Need to be operationalized so that they can be measured	Should incorporate stakeholder perspectives
Units and analysis	Should be reduced to simplest term	May include the complexity of whole situations

Table 8 Features of positivism and social constructionism (interpretivism) (Bamanathon 2008)

Interpretive research is therefore predicated on the belief that a more complete understanding of drivers (in this case, the perceptions of and attitudes and behaviours towards the current version of Facebook) can only be achieved by properly understanding the interpretations of users' interactions and experiences. Numerous studies have successfully applied the interpretive research philosophy to investigate cultural differences and user interfaces in the study of Human Computer Interaction and technology adaption (Orlikowski 2010).

The current study's contribution to the field of Human Computer Interaction is in spotlighting the culture's role as a driver. It has been argued that ignoring users' cultures and adopting a purely technical approach to user interface design will often lead to misleading results. This underlines the importance of adopting a new orientation for online design that gives due consideration to both social and object unity (Rincon 2013). Berntzen (2004) argues that utilising an interpretive research approach in user interface design may enable better understanding of the relationship between technology and its users. This position is supported by Stockdale et al. (2008), who argue that understanding the interpretive research approach is essential for understanding the social context in any study conducted in the field of information technologies. Interpretivism is used to understand subjective interpretations of human behaviour and

experiences (Bryman 2008) through a reliance on participants' backgrounds and experiences.

Therefore, this research has adopted the interpretivist approach to understand the current issues in Facebook and identify how these issues affect the users' perceptions, attitudes and behaviours.

3.3 Research Approach

There are numerous valid ways of approaching a research question. Therefore, an exploratory sequential design has been used in this research. In an exploratory sequential design, according to Creswell and Clark (2011), the researcher first collects qualitative data and then quantitative data. The purpose of an exploratory sequential methods design involves the procedure of first gathering qualitative data to explore a phenomenon and then collecting quantitative data to explain relationships found in the qualitative data.

Therefore, an ethnographic approach can exploit the benefits of either pure approach by overcoming some of their weaknesses (Venkatesh et al. 2016). In the context of this study, in which both a qualitative and quantitative approach has been used to gain the best answer to the research question, an interview survey was conducted first to provide a thorough understanding of the perceptions, attitudes and behaviours of a relatively small body of participants. Afterwards, to generalise the results, a quantitative questionnaire was used to grasp the reality from a larger sample size; this would not be possible with face-to-face interviews because of the time, costs and statistical evaluation of the responses of a larger number of participants.

3.4 Research Strategy

This study has been undertaken in three stages. The first of these was to understand users' perceptions, attitudes and behaviours towards different design elements of Facebook. Therefore, the best way to gain the most information from the users is by asking open-ended interview questions followed by a questionnaire. The next stage was to develop a set of design guidelines for user interface design. The third stage was evaluate the design guidelines (See Figure 10).

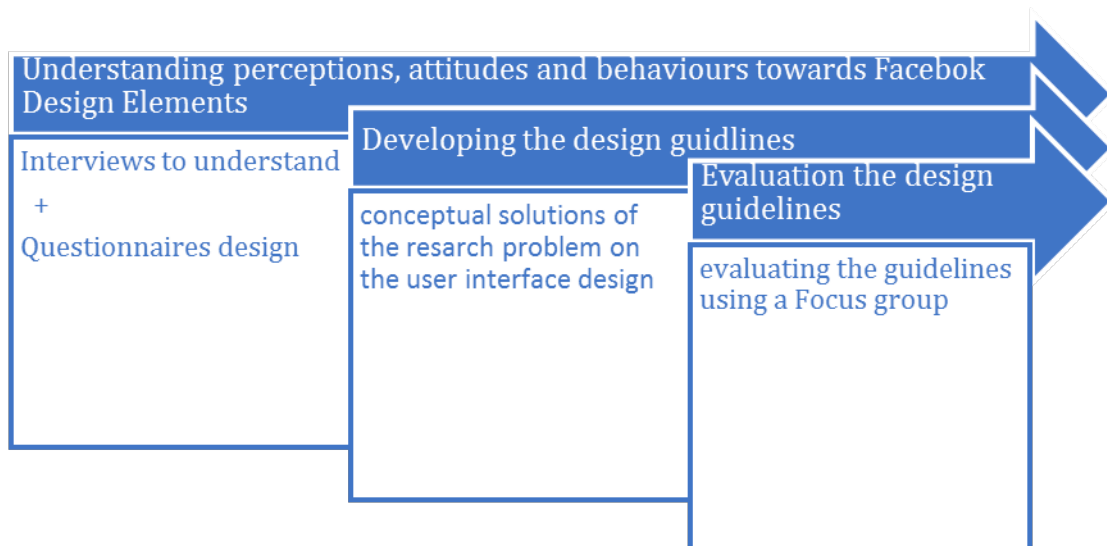


Figure 10 Structure of the research methodology

Perceptions and behaviours towards Facebook

The first research method, the interview stage, was intended to develop a general understanding of users' perspectives about the Facebook user interface design. This stage used interviews to analyse participants' understanding with regard to issues related to the user interface in Facebook. The aim of this stage was to gain a detailed understanding of the attitudes and behaviours of each participant towards different design elements. The results of the interviews were incorporated into the two quantitative questionnaires to further investigate the views of participants with regard to the Facebook design issues. This particular research methodology was chosen for data collection in this context due to its recognised appropriateness for "measuring the behaviour, perceptions, preferences, opinions and intentions of relatively large numbers of subjects, in a more rapid and cost-effective manner than alternative methods" (McLeod 2014, p.2).

3.4.1.1 Interview

The interviews were intended to explore the views of Saudi Arabian users with regard to the Facebook user interface. The interviews help to identify the issues that Saudi users have experienced during their interactions with Facebook. The semi-structured interviews involved 12 structured, open-ended questions. Appendix B lists all the interview questions and the participants' answers. All the participants had been active, registered members of Facebook for a minimum of 3 years. The group was categorized

into Arabic Facebook users, English Facebook users, users who use Facebook a few times, those who use it moderately often, and those who use it extensively. The interviewees comprised 13 females and 6 males ranging from 21 to 37 years old.

The interviews were conducted both face-to-face and via Skype. Skype was used during this stage, as it enables interviewees who have time and place limitations that would prevent their involvement in face-to-face interviews to participate in the research (Janghorban et al. 2014). Each interview was conducted in Arabic and lasted approximately 45 minutes. The transcripts of the discussions were then translated from Arabic to English by the interviewer.

3.4.1.2 Questionnaire one

The first survey (questionnaire one) was devised following an analysis of the responses from the interviews. The main objective of this questionnaire was to gain greater insight into the views of Saudi Arabian users concerning the current Arabic design of Facebook, with specific reference to issues or problems that they had encountered.

Since issues are believed to be cultural, the analysis focuses on analysing the differences in the results between Saudis who are living in Saudi Arabia and those who are living in other countries. The initial assumption is that when individuals travel and are therefore exposed to other cultures, they become better able to understand international symbols and to follow up their preferences than those who have no experience with other cultures (Hannah 2015). To critically examine the relevance of the data, a t-test was conducted to enable comparisons between the views of Saudis living in Saudi Arabia and those living abroad. A quantitative approach was adopted that consisted of seventeen questions (see Appendix C). The choice of this approach was to assist in identifying any issues experienced by Saudi users when interacting with the Facebook user interface.

The multiple-choice questionnaire was implemented by means of a link to the document, which was initially sent to colleagues, friends, and other potential respondents through Facebook, Twitter and Email contact lists. The link was eventually sent to a total of 652 contacts; exactly 200 responses were received. Though all the participants were natives of Saudi Arabia, the questionnaire was written in both Arabic

and English. A clear explanation of the questionnaire's scope and purpose was provided on its front page (see Appendix D).

3.4.1.3 Questionnaire two

Based on the issues that arose from the interviews and the first survey, and due to the fact that some points from the responses in the first questionnaire were not clearly understood, a second questionnaire was developed. The second questionnaire was implemented in an attempt to gain an improved understanding of the design issues facing the Arabic version of Facebook to improve the interaction of Saudi users with the social media platform.

This questionnaire was administered in exactly the same way as the previous questionnaire (see Section 3.4.1.2). To receive quick responses, the questionnaire was made available online in Qualtrics. A range of applications including Facebook, Twitter, and text messaging were employed to encourage and support participation. However, out of the 265 contacts who were sent the link to participate, only 161 responded. Questionnaire two contained 18 multiple-choice questions and required approximately 20–30 minutes to complete. The questions were based on demographic factors, Facebook experiences, and design preferences (see appendix D).

Design guidelines development

After analysing the results obtained from the interviews and the questionnaires, the design guidelines were developed. These guidelines have been constructed to aid designers in creating user interfaces that are more sensitive to the culture and preferences of Saudi users.

The proposed solutions from the results of the interviews and questionnaires were applied to the proposed design guidelines. Rather than developing a new holistic design for Facebook, the aim of this was to explore the implications of the findings and to discover their potential effect on the Facebook design. The design features that are provided are concerned with those elements of the user interface that created negative perceptions of and behaviours towards the translated Arabic user interface of Facebook.

Evaluating the design guidelines - Focus group

A focus group was formed to evaluate the design guidelines and discuss the proposed solutions. This approach was deemed to be an appropriate method for this purpose, as it provides substantive user feedback before the design guidelines are finalized.

According to Crawford (1997), conducting a focus group may have some potential opportunities for bias to creep into group discussion results. Some participants may feel as though they cannot give their true opinions due to the psychological pressure resulting from their concern as to what other members of the group may think. Some may feel tempted to give opinions that they feel will be respected by the group.

The presence of one or two ‘dominant’ participants may repress the opinions of others. Some may not feel confident about expressing an opinion. Some may prefer to submit to the opinions of others rather than cause a conflict or argument to develop. The researcher was aware of this bias before conducting the focus group. However, it was decided that conducting a focus group to validate the design guidelines would far outweigh the problems. Careful planning along with managing the possibilities of bias may limit the difficulties arising in the first place.

Focus groups enable participants to criticise and give feedback in a constructive form (Krueger and Casey 2014). Also, it enables different participants to see what others see, and this can create a discursive conversation between participants to finally improve the validity of the design (Onwuegbuzie et al. 2004).

A total of nine participants were involved in the focus group. It was scheduled via email and text messaging three days before the meeting. All conversation that took place during the focus group’s meeting was recorded for detailed analysis, and each participant was provided with a copy of the questions. The focus group was held entirely in Arabic, meaning that the responses had to be translated into English for analysis. Each question was printed on a piece of paper along with a screenshot from both the English and Arabic versions of Facebook for discussion.

The focus group was initially briefed, with the purpose of the research being provided to the participants by systematically explaining each question and then offering a detailed outline of the design guidelines. Each participant was given time to offer their own

opinion and whether or not they agreed with the other participants. The participants were also told that the focus group was recorded for research purposes only.

3.5 Analysis

This section discusses how both the qualitative and quantitative data from each study were analysed. The quantitative approach was used to combine the results from interviews using qualitative methods. The analysis of the accumulated quantitative data from the questionnaire was exhaustively compared with the analysis of the qualitative data in an attempt to obtain a holistic view and to provide a more in-depth analysis of the backgrounds of the quantitative and qualitative data.

Qualitative Data Analysis

To analyse the interview data, this research used coding based on a conceptual framework identified in the literature review (section 2.6). The codes that were used primarily related to what was perceived to be negative by the users (criticisms), supplemented by their perceptions of the design and any sources of confusion in the interface. These points enabled the researcher to understand the problems in the design that needed to be improved.

Quantitative Data Analysis

Both questionnaires were subjected to statistical analysis. The statistics were obtained from the Qualtrics.com website. T-tests were used for questionnaire one to compare the responses from Saudis living in Saudi Arabia and those living abroad. The purpose of this was comparison was to gauge whether a statistically significant difference existed in attitudes towards the Arabic version of Facebook between these two populations. However, in questionnaire two, descriptive analyses such as means and standard deviations were used to understand the behaviours.

3.6 Ethical considerations

This study has followed the University Ethical Review Process with the required documentation being submitted to the relevant committee for approval. All the participants who participated in both the questionnaires and interviews were informed of the study's purpose. They were also assured that their responses would be kept anonymous and confidential. In addition, the interviewees were informed of the

researcher's intention to record the interviews, but that the recordings would be destroyed upon completion of the analysis.

Both questionnaires were accompanied by a cover letter that the participants were able to read before starting. This letter clearly explained the purpose and aim of the research method; it also assured them that all participants would be kept anonymous and that their answers would be treated confidentially.

3.7 Chapter Summary

The design methodology was undertaken to investigate the views of Saudi Arabian participants with regard to the user interface design of the Arabic version of Facebook. The first and second objectives of this research were addressed by the interview and questionnaires, namely the use of these research tools to better understand Saudi users' perceptions and attitudes towards the current Arabic version of Facebook. The next objective was to develop design guidelines to provide bespoke solutions for the Arabic version of Facebook that would best accommodate Saudi culture, with the final objective being to evaluate the design guidelines through a focus group.

This research used an ethnographical approach to achieve the best of each data-collection technique. Combining the data from both approaches proved to be an effective way to answer the research question; the broad perspective offered by quantitative methods complemented the profound insights into personal experiences that were facilitated by the chosen qualitative approach.

CHAPTER 4: PERCEPTIONS AND BEHAVIOURS TOWARDS FACEBOOK

4.1 Introduction

This chapter seeks to understand and investigate the views of Saudi Arabians towards different design elements of Facebook, with particular reference to the translated version of the platform. Therefore, the results from the interviews and the two questionnaires will be analysed to comprehensively examine the problem from different perspectives and improve understanding of the research objective.

Each section will discuss the design elements noted by the participants that are related to cultural preferences, such as the particular appearance and labelling of icons, layout and the information structure reflected in the complexity of the user interface. In addition, the perception of the users of the Arabic translation of the Arabic version of Facebook will also be provided, including the accuracy of the translation and sentence structure. The discussion will also demonstrate the perception of users regarding the ways in which the design of Facebook or certain language issues led them to behave differently.

The interview questions were conducted in a semi-structured format in which participants had to answer specific questions that had been informed by the conceptual framework created in Chapter 2. Questionnaires 1 and 2 were developed after analysis of the interviews to extend understanding of the responses (see Figure 11).

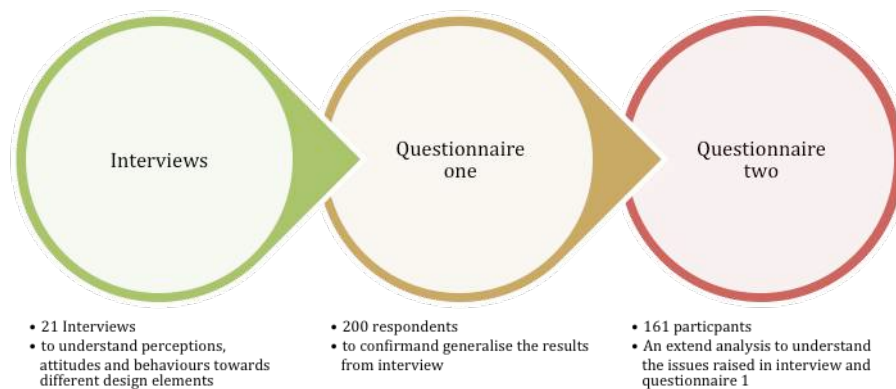


Figure 11 Chapter research methods

4.2 Interview

This section starts by defining and investigating the interview findings. The interviews were conducted to obtain insights into the Saudi perception of Facebook’s current design. Commentary will be provided on issues related to culture, such as icons, labelling and layout design. The section also includes the translation found in the Arabic version of Facebook.

Interview participants

The main purpose of the interview questions was to ask participants about culture-based design issues, such as their understandings of icons or their opinions on the positioning and alignment of Facebook’s elements. The questions also covered the language used in the Arabic user interface of Facebook and whether participants perceived any translation issues, as mentioned in section 3.4.1.1. Table 9 lists all the participants’ codes, along with their characteristics.

<i>Code</i>	<i>Gr*</i>	<i>A*</i>	<i>Facebook experience</i>	<i>Facebook Use</i>
<i>SS1_A_F</i>	F	26	3 years	Few
<i>SS2_A_M</i>	M	31	5 years	Moderate
<i>SO1_E_M</i>	M	25	5 years	Moderate
<i>SO2_E_M</i>	F	32	8 years	Moderate
<i>SS3_A_E</i>	F	28	9 year	Extensive
<i>SS4_A_E</i>	F	24	6 years	Extensive
<i>SS5_A_E</i>	F	31	6 years	Extensive
<i>SS6_A_E</i>	F	33	10 years	Extensive
<i>SO3_E_M</i>	M	24	8 years	Moderate
<i>SO4_E_M</i>	M	25	7 years	Moderate
<i>SO5_E_M</i>	M	33	9 years	Moderate
<i>SS7_A_M</i>	F	34	8 years	Moderate
<i>SS8_E_M</i>	F	31	7 years	Moderate
<i>SO6_A_F</i>	M	24	5 years	Few
<i>SS9_A_F</i>	M	37	3 years	Few
<i>SO7_E_F</i>	F	35	4 years	Few
<i>SO8_E_F</i>	F	29	3 years	Few
<i>SO9_E_E</i>	F	24	5 years	Extensive
<i>SO10_E_E</i>	F	26	5 years	Extensive
<i>SO11_A_M</i>	F	31	3 years	Moderate
<i>SO12_A_F</i>	F	27	4 years	Few

Table 9 Participants characteristics who were involved in the interview

Code*: participants Gr*: Gender A*: Age

4.3 Interview results

The perception of Facebook's design elements will be discussed in this chapter. First, Saudis' perceptions of culture-related issues, such as icons and layout design, will be discussed e.g. how users viewed these elements and how it affected their behaviour towards Facebook. Second, it will discuss the language that is found on the Arabic (translated) version of Facebook e.g. it will discuss users' perceptions of the accuracy of the translation and how it affected their interactions and behaviour.

Therefore, the following section will discuss how culture-related issues lead to users' perceptions of and behaviours towards different design elements of the Facebook interface (see Figure 12). It is known that attitude is the main driver of behaviour (Venkatesh et al. 2016). However, this research showed that cultural design issues caused negative attitudes towards the application, which in turn affected users' behaviours towards Facebook's user interface.

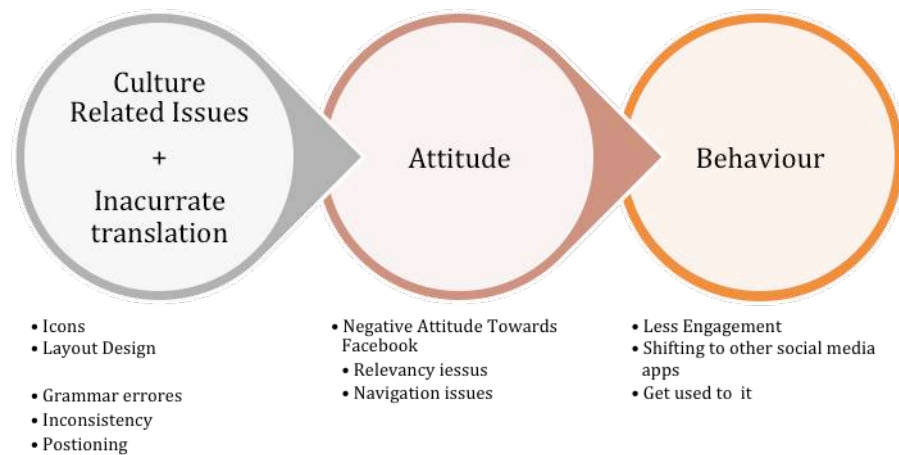


Figure 12 Structure of the interview results

Icon Design

Facebook icons have been found to have two main issues: the relative unfamiliarity of the images to Saudi people and that the labels are too abstract for many Saudi users to understand. These design issues have resulted in confusion among users, with many perceiving the icons to be irrelevant. This is reflected in their behaviours in terms of being reluctant to use Facebook, getting used to the icons over time, regardless of their meanings, or searching for other ways to understand the icons and labels. The following sections address these three elements. The first section looks at the perceptions of and feelings towards the problem; the second section focuses on users' behaviours towards these issues (See Figure 13).

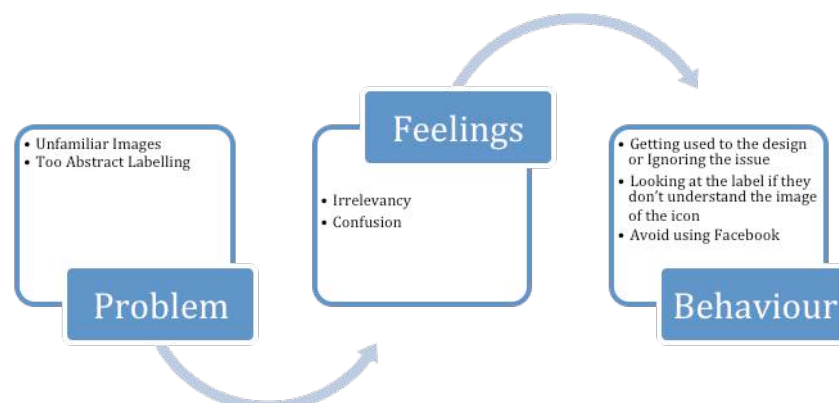


Figure 13 The role of Facebook icon design issues on the users behaviours

4.3.1.1 Problems: Image Familiarity and Abstract Labelling

As noted above, two problems are especially commonly perceived by participants: image familiarity and excessively abstract icon labels.

Image Familiarity

According to the interview questions, the participants often struggled to understand the meanings of the icons used on Facebook. According to current literature, icons and images should be culturally accepted to avoid what Bernard (2002) refers to as “disorientation”, which refers to the avoidance of navigational problems when users search for specific information. Harley (2014) found that when no universal standard existed for icons, clear text labels became necessary to effectively convey meaning and to reduce the ambiguity that can arise when navigating through an interface. This was very much the case for the interviewees in this study, who claimed that navigating Facebook was confusing because the icons and labelling made it difficult for them to decide where to go next.

*“Choosing through the icons to locate where to go is **confusing**”.* SO1_E_M

*“Facebook designed the icons **without considering their meaning which is confusing**”.*
SS1_A_F

Labelling used for icons

To help overcome ambiguity, a text label is often present alongside icons to clarify their meanings in particular contexts (Nielsen group 2014). This research showed that, in addition to the use of unfamiliar images, the text used for labelling was excessively abstract and insufficiently detailed. This supports the position of language context theory (Yang 2016), which stresses that problems can arise when one word has several meanings, which confuses users.

*“The **label of the picture icon for me is vague**. Does it mean uploading, sharing, importing or exporting pictures? I wish that labels had a ‘verb’ to explain them”.*
SS1_A_F

*“It is really funny (the labels). It is **not specific** to my understanding”.* SO1_E_M

*“Navigation through the pages of the Homepage and settings is hard and confusing because of **the irrelevant labels of the text**”.* SS2_A_M

In effect, this means that the problem is not in translating words from English to Arabic. Instead, the problem is the nature of Arabic, which has words that can be understood differently. In other words, Arabic is an explicit language. The meaning of many icons was not immediately clear from the users' perspectives, even if they were well designed from a design perspective.

4.3.1.2 User Behaviour towards Icon Design

In their responses, the use of the words “relevancy” or “confusion” indicates that the images used for icons or the labels are not easily understood. The evidence from the interviews suggests that both heavy and infrequent Facebook users cite problems in understanding the images. This strongly suggests that significant differences exist between users and designers concerning the interpretations of visual content (i.e. pictures and icons). Three forms of behaviour have been identified concerning this struggle (See Table 10 and Figure 14). First, infrequent users do not understand what the images are supposed to represent, which discourages them and leads to them avoiding using Facebook. Therefore, the design of the icons has a direct, negative influence on these groups' behaviours as users.

*“The **design of the icons** does not have any meaning to me and makes the whole **layout look weird. Indeed, I am not happy with using it**”. SO1_E_M*

Moderate users who were still interested in using Facebook showed an inability to overcome the icons' lack of clarity by reading the text instead of using the visual contents. This perception of irrelevancy led this group to avoid looking at the icons, simply because they the images were not useful to them.

*“The way that the **menus** are labelled is **confusing** **I gave up on looking at the icons in Facebook because they do not mean anything**”. SO3_A_E*

Even extensive users stated that they struggled to understand some of the icons. However, repeated interaction with these icons enabled the users to become familiar and comfortable with them over time.

*“**I don't understand the icons. I ignore the images**”. SS3_A_E*

*“**The icons do not mean anything to me, but I got used to it**”. SS4_A_E*

*“**I don't care about the icons. They do not mean anything to me. I just pretend they are just random images**”. SS5_A_E*

<i>Users</i>	<i>Behaviour</i>
<i>Extensive user</i>	Get used to the design or ignore the issue
<i>Moderate user</i>	Look at the label if they do not understand the image of the icon
<i>Light user</i>	Get annoyed and avoid using Facebook

Table 10 Participants behaviour, based on their usage

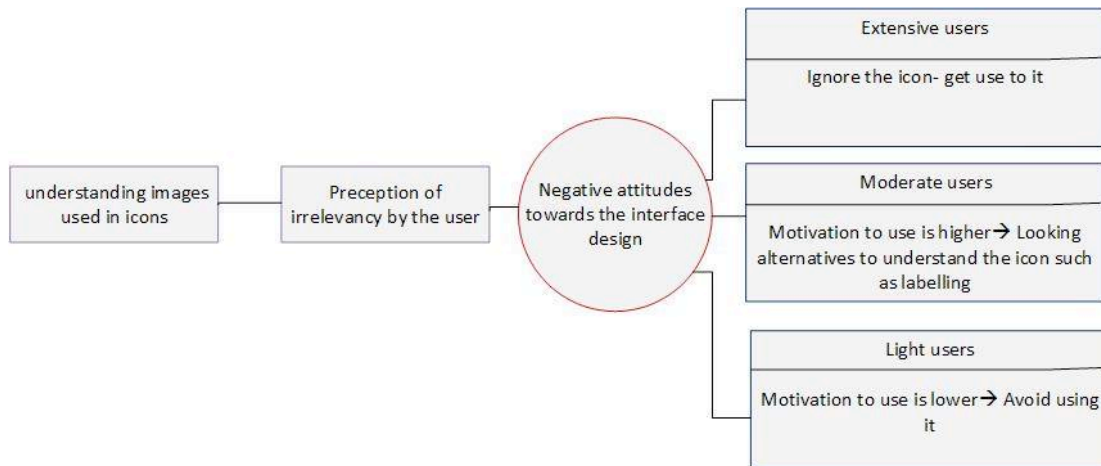


Figure 14 Users’ perceptions and behaviours towards the design of Facebook’s icons

This research investigated the role of icon design in understanding the attitudes and behaviours of Facebook users in particular. The findings of the current research support those of previous studies, which showed that users might interpret a sign in a number of ways, as the meanings that people accord to images are highly dependent on sociocultural contexts (Islam and Bouwman 2016). Furthermore, Nakamura et al. (2012) stated that the “relationship between the icon itself and its meaning makes visual representation self-explanatory and, therefore, easier to learn than textual language”.

This research supports others by showing that icons need to be easy to understand from the perspective of users, especially those who avoid uncertainty, as they are discouraged by any unclear instructions (Jankowski et al. 2016). In addition, the literature claims that the initial appeal of icons can be held constant, while the ease of processing is manipulated by systematically varying the complexity and familiarity of the icons presented (McDougall et al. 2016). The current research supports this finding by showing that when users are not motivated to use Facebook to connect with friends or for hedonic reasons, they will not seriously engage with the program or they may even stop using it altogether. If users are well motivated by hedonism or through connections with their friends (the peer effect) (Mikalef et al. 2016), usage will be passively followed up, without active engagement or avoidance of the system, as there are risks

without real benefits. This appeal may change slightly if the motivations to use Facebook are higher than the psychological costs associated with the perceptions of complexity and the familiarity of the icons.

Layout Design

This section will discuss Saudi perceptions of Facebook's layout and navigation design. Navigation is an essential feature to consider in the interactions of individuals with user interfaces. Almost all of the participants in this study perceived effective layout design to meet their needs an issue of critical importance. The following example from a Saudi person living in Saudi Arabia illustrates that the resolution of layout issues would make it easier for him to navigate through Facebook.

*“If the issues of **translation and layout** were solved, it would make my **navigation easier**”. SS3_E_M*

4.3.1.3 Layout Design Problem: Complicated Pages

A properly designed navigation menu that suits Facebook would prevent users from missing elements and facilitate their interactions through the use of correct tools. As discussed earlier, the first issue that affects perceptions regarding ease of use is the irrelevancy of icons within Facebook's navigation. This issue makes navigation slower and more confusing for Saudi Facebook users, as multiple participants noted.

*“Navigation through the menus that are not related to their meaning makes **navigation hard**”. SS1_A_F*

After investigating the multiplicity of factors proposed by the literature (see section 2.3), the problems raised by most interviewees were the structuring of information and navigation, among other layout design features. Other factors are not discussed here, because they were not been raised by respondents.

The literature discusses how cultures that have high power distance and high uncertainty avoidance will typically have specific navigation preferences in relation to the number of icons, menus and links that contribute to their perceptions of ease of use (see section 2.4.1.2). However, users who experience difficulties in locating icons and menus in the user interface design will tend to have a negative perception concerning the navigation. This research investigated the motivation for users to socialise with friends using Facebook and the influence that this had on their decisions to spend more time

searching and acclimating to Facebook’s design. However, if the motivation of a user is low, the data suggests that he or she will either be less engaged with his or her friends or avoid using the Arabic version of Facebook (See Figure 15).

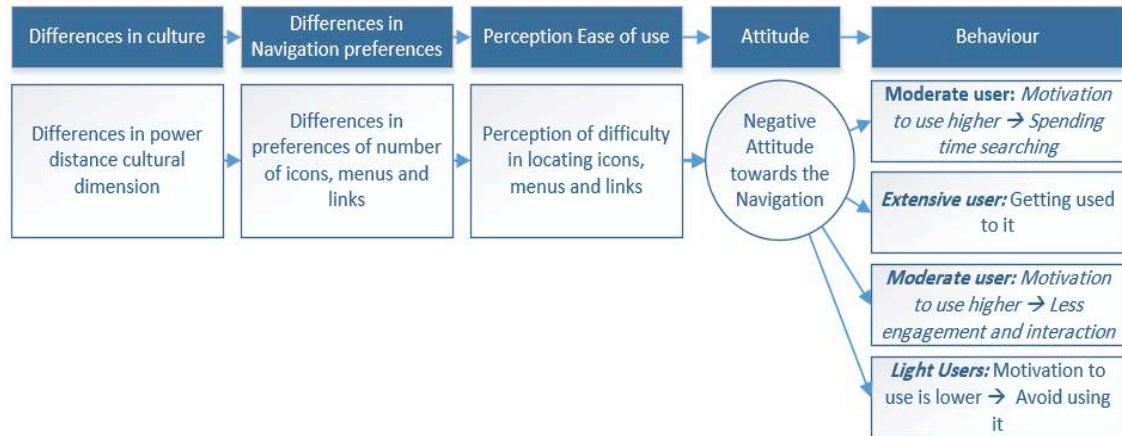


Figure 15 Layout design concerning culture differences

4.3.1.4 Feeling overloaded

Users have a negative perception of Facebook’s navigation, claiming that the platform is complex to use. Given that a Saudi person will generally have a relatively high uncertainty avoidance and power distance, the perception of page complexity is proposed to be the reason for this belief. It has been found that Facebook’s current home page and profile page interfaces contain too many options, icons and hyperlinks; consequently, they are perceived as being complex and difficult to use. Indeed, all of the interviewees mentioned that they struggled with the level of detail presented and the volume of information on these pages.

A number of respondents stated that there were too many options available to them, and they did not like that these options had places in determining their relationships with others. This can be seen in the following comments:

“Too many menus and stuff in the home page and profile page”. SS3_A_E

“Facebook has so many navigation possibilities, which makes the layout look crowded and hard to navigate”. SS2_A_M

The complexity of the interface available to Saudis confuses them and makes them feel unable to cope with all of the options, effectively making it more difficult for them to make decisions. This may be attributed to their culture of high power distance and high

uncertainty avoidance, which has been linked to finding an overabundance of options unclear (Burgmann et al. 2006). This stance was confirmed by interview participants, who stated that too many navigation possibilities confused them.

*“There are **too many navigation possibilities** placed in the Home page, which make it **hard for me to choose**”.* SO1_E_M

*“Navigation through the settings page is **hard and confusing** due to the design of the page”.* SS1_A_F

*“The **navigation in the settings** is hard and complicated to change because of **all the options**”.* SO8_E_M

Furthermore, high power distance and uncertainty avoidance in Saudi culture leads users to desire simple and straightforward layouts to avoid confusion and navigate easily (see Table 11 from interview questions).

P	Structuring information
SO5	<i>“There are lots of menu on the top that mean the same thing in the side of the page, making it hard to locate”.</i>
SO2:	<i>“I don’t use most of the elements that are in the news feed and settings due to misallocating where they are”.</i>
SS5	<i>“There is too much stuff on the left- and right-hand sides of the home page and on the profile page.”</i>
SO2:	<i>“In the settings page, it is hard to read the amount of text placed on the screen, which makes it hard to locate each setting”.</i>

Table 11 Participants’ views of the information structure of Facebook

4.3.1.5 Users’ Behaviours towards Navigation Design

The design of the layout affects the behaviour of users towards the user interface. Broadly speaking, this behaviour falls into four different categories, each denoting a particular attitude towards Facebook. The first group stops using Facebook and moves to other, less complex social media platforms; the second group, which still experiences issues with navigation, is motivated to use Facebook, despite the excess time spent searching; the third group has issues with navigation, which lowers users’ engagement with the user interface; and the fourth group does not perceive complexity problems and enjoys using Facebook, making those included frequent users. Table 12 illustrates the differences between high and low hedonic motivations.

	High perception of complexity	Low perception of complexity
Low hedonic motivation	Use other Social Media	Spend more time searching
High hedonic motivation	Less engaged with interface	Frequent users

Table 12 Effect on users with low or high hedonic motivation

The differences between behaviours could also be attributed to the level of hedonic motivation that a user feels (see Figure 16). Hedonic motivation is indicated by the number of friends that a user has on Facebook and the enjoyment they feel from reading news from friends and family (Mauss et al. 2011; Lin et al. 2014). Based on supporting evidence from the interviews, this hedonic motivation seems to partially or completely mediate any issues that users with high motivation experience concerning the Facebook interface. Having a large enough network of friends on Facebook can provide sufficient motivation to use the program, irrespective of any perceptions of its weaknesses. In other words, if the general perception of users is negative, this may lead them to reduce their usage. However, if their motivation to use the site is high, then users may put effort into socialising with their friends. In brief, users will either get used to Facebook and keep using it, or they will be less interested in using Facebook.

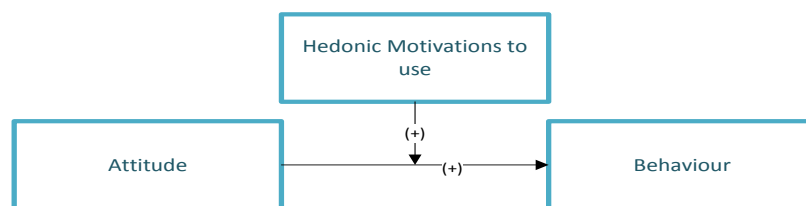


Figure 16 The effect of Hedonic motivation on users attitude and behaviour

Moving to Less Complex Social Media Applications

Some interview participants have a negative perception of Facebook due to confusion about Facebook’s layout and use less complex social media sites, such as Twitter, to connect with their friends. Many users claim to prefer Twitter over Facebook because the layout of Twitter is much simpler and does not have many features.

“Twitter is designed to be much simpler. You tweet between users easily and there are no extra features that bother the layout”. SO6_A_F

*“Facebook is more **complicated** to use compared to **Twitter**, which has fewer features to navigate”. SS2_A_M*

Less Engagement and Interaction

Participants stated that confusion resulting from the layout of Facebook lowered their engagement with the platform or even resulted in them avoiding it. Some Saudi participants admitted avoiding using elements of Facebook due to confusion caused by the navigation. These users do not want to spend time thinking too hard about finding items in an uncomfortable interface.

*“There is too much stuff on the left and right sides of the home page and on the profile page, which makes me **not know where to go**”.* SS5_A_E

*“**I don’t use most of the settings because there are too many menus**”.* SO1_E_M

*“**I do not to add notes in Notepad because I don’t know how to use it**”.* SS1_A_F

*“**I find it hard to post personal stuff because of privacy.**”* SO8_E_F

Accepting it in time - Getting used to the design of the layout

As noted by some interview participants, when sufficient hedonic motivation exists to interact with friends, users are pushed to use Facebook, regardless of negative attitudes towards the platform. For example,

*“**The thing that allows me to stay connected with Facebook is because all my friends use Facebook and therefore all their interest and news are in Facebook**”* SS7_A_M

This suggests that users who are motivated to socialise with friends who are current Facebook users are forced to ignore issues and to acclimatise to the design. The interviewees identified that they enjoyed communicating with their friends and therefore ignored the complexities of Facebook’s user interface.

*“**I don’t understand the icons. I ignore the images**”.* SS3_A_E

*“**I got used to the irrelevant icons and just read the labels**”.* SS4_A_E

*“**I like using Facebook because it allows me to chat with friends. I do not bother much with crowded pages, which appear difficult to use**”.* SS6_A_E

*“**I like how you can comment and share your comments with others**”.* SO5_E_M

Language Issues

As discussed in the literature chapter, Facebook has introduced an Arabic version for Arabic users (see section 2.4.2). According to the Al Arabiya News (2014), 41% of Saudi Arabians who use Facebook do so by means of the Arabic version, whereas 59% use the English version. This shows that more than half of Saudi Facebook users do not

use the Arabic version of Facebook, possibly due to issues related to the translation and the layout. The implications of these issues for user behaviour will now be discussed.

Previous literature has shown that improperly translated texts have a negative impact on users' understanding of the language, which leads to confusion and, ultimately, negative perceptions of user interface designs (Katan 2014). A native language is an individual's first choice for social communication and is the cognitive process that enables people to organize their thoughts when navigating online (Schenker et al. 2008). Therefore, before translating a user interface, designers need to properly consider the thinking patterns of users who have different native languages, as individuals who speak different languages will behave and recognise information in different ways (Spradley 2016).

As outlined in the following section, it has been identified that the interviewees have issues with the translated Arabic version of Facebook. They find the translation, including sentence structures and choices of words, inaccurate, resulting in difficulties or misunderstandings. These users either accept and ignore the problem or move from the Arabic to the English version (see Figure 17).

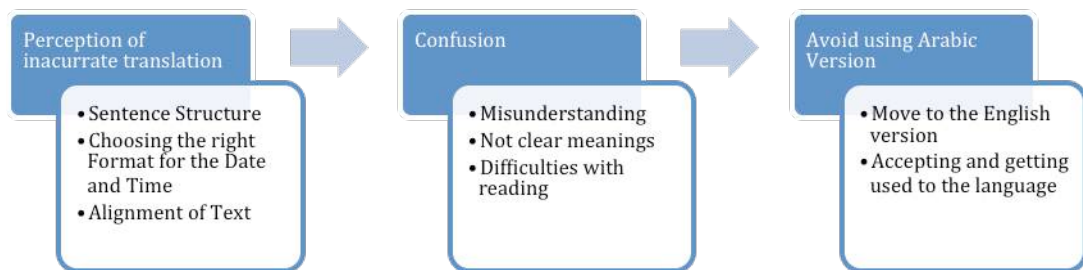


Figure 17 Process of how inaccurate translation leads to participants' lack of engagement due to inaccurate translation

4.3.1.6 Problem: Perception of Inaccurate Translations

Inaccurate translations, either in terms of incorrect sentence structures or poor word choices, are considered very important to the participants of this study. The following sections will outline the issues that users claimed to find difficult to understand and discuss how these responses may have affected their behaviours when interacting with the Arabic version of Facebook.

Difficulties Understanding Language Due to Sentence Structure

The participants stated unequivocally that sentence structure is inaccurate when there is poor grammar, incorrect punctuation, superfluous words, inconsistent dialect, or a mix of Arabic and English in one sentence. These kinds of problems can cause confusion among users and create an overall lack of clarity when interacting with the user interface, potentially leading users to mistrust or discontinue use of Facebook.

“The wording of sentences is confusing... The translated Arabic version has some inconsistencies with the dialect. Maybe this is because of inaccurate translation”. SS1_A_F

“When surfing, I find that there are grammar errors in the Arabic text... The wording of sentences is confusing”. SS2_A_M

“There are grammar errors and the words used are not understandable”. SS3_A_E

Interviewees stated that all text should be written in one language (in this case, either Arabic or English).

“Yes, the translation issue of the Arabic prevents me from navigating through the home page comfortably because the Arabic layout uses two languages, which frustrates me when they are in the same sentence. This pushes me to just open Facebook and look at the videos and photos, then close Facebook. I do not bother people who send me posts, which limits me from opening Facebook very often”. SO11_A_M

“The mix of Arabic and English in one sentence makes it hard to read”. SS6_A_E

Choosing the Right Format for the Date and Time

Saudi Arabia has an Islamic society that has been following the Islamic calendar (Hijri) since the country was founded. The Hijri calendar is decades old, is based on actual sightings of the moon and is used to identify Islamic holidays and other important events, such as Muharram and Ramadan.

It is worth highlighting the difficulties that users may have when interacting with the Gregorian calendar instead of the Islamic calendar. For example, some versions of the Gregorian calendar are often perceived to be flawed due to the formatting of dates and numbers. Interviewees often found it confusing to have the Gregorian calendar presented in the Arabic version of Facebook.

“The numbers are written in English, and some words are not translated, which makes the whole sentence confusing and hard to read”. SO3_E_M

*“The **numbers used are wrong** because they are written in English, not in Arabic”.* SO1_E_M

*“Translating the Arabic context and using English numbers, **names and locations in the same sentence** is confusing”.* SS2_A_M

*“The **date used in Facebook** is Gregorian and not according to the Hijri Calendars, which is confusing to follow”.* SS1_A_F

*“I **don’t know what the Gregorian calendar** represents; I only understand the Hijri calendar”.* SS3_A_E

Alignment of Text

The alignment of text is an important factor to consider when translating text from English to Arabic because English is written from left to right, whereas Arabic is written from right to left. As shown in the literature review, this change can profoundly affect users’ comfort during interactions with user interfaces.

Users interact differently with screens, depending on their language orientations (Shneiderman 2010). When Facebook was translated from English into Arabic, a number of deficiencies existed in the layout, particularly in terms of the positioning and orientation of the text and other key elements.

Navigation styles and text positioning should be sensitive to language use and real world experience (Al-Badi and Mayhew 2010). In the context of the current study, it is especially important to understand the difference in visual attention for a user who surfs from right to left, as opposed to one who surfs from left to right, as it can help prevent confusion when interacting with a user interface (Chan and Bergen 2005). The following is a quote from the interview:

*“The **words that are written from left to right** make the whole layout **confusing to look at**”.* SO3_E_M

This can also be seen in the responses that address the positioning of the text on the settings page, which is cited as confusing and counter to its intended purpose, as it hinders users from interacting with all of the available elements.

*“**Placement of text in the settings page is confusing**”.* SO8_E_F

*“The **positioning of elements on the settings page prevents me from changing** most of the settings”.* SS2_A_M

*“The settings are **very hard** to read. I usually **place a ruler in each line** to read the sentence”*. SS6_A_E

*“The **text** is not aligned with the **page correctly**, making the **layout look weird**”*. SO5_E_M

The lack of standardisation concerning alignment of text on different pages increases confusion. This may be because shifts in orientation and alignment make text more difficult to read. The following are quotations from interviewees:

*“When you read through the news feed, the **text** is sometimes **aligned** to the left and sometimes to the **right**, which is confusing”*. SO2_E_M

*“The alignment of the **text in the home page and profile page** is not right. Some is on the right and some on the left, which **makes reading hard**”*. SS3_A_E

*“The translation should be right to match the **orientation of the rest of the images**. Currently, it is just random text that is placed in the page, which is **confusing to look at**”*. SS5_A_E

Participants seem to prefer text and menus that are aligned from right to left (in the same way as the Arabic language), which make the process of reading more intuitive and comfortable, and in turn lessen confusion and disorientation.

*“The **alignment of text in the menus** and the settings page should be designed well to be more clear and easy”*. SO4_E_M

4.3.1.7 Feelings towards the Arabic Version

The interview participants raised specific issues concerning their attitudes towards the elements of the design of the Arabic version of Facebook. They have stated that, regardless of their level of Facebook usage, the menus and translation were often hard to follow and confusing during their interactions with the site.

*“The issues regarding **menus and the translations** used in the home page, news feed and settings page are not **enjoyable to read**”*. SO4_E_M

*“The **translated text** in the home page is inconsistent and **confusing**”*. SO3_E_M

*“The menu’s translation describes the page in a funny way **and does not make sense**”*. SO4_E_M

*“If Facebook **fixed the translation** and the menu in the layout was clear, **I would enjoy it better**”*. SS4_A_E

*“**I don’t like the Arabic layout**, as it **sometimes confuses me with the translation**”*. SS6_A_F

4.3.1.8 Behaviours towards the Arabic Version

The issues in the Arabic version of Facebook have three consequential behaviours. The first is for users who do not know English at all, but have high hedonic motivations to connect with friends. This leads users to accept and get used to the language mistakes. The second behaviour is for users who know English, who will move to the English version of Facebook. The last behaviour is to feel frustration in the use of the Arabic version of Facebook, which lowers engagement.

A. Less Engagement and Interaction with the Arabic Version

The opinions regarding the translation of Facebook into Arabic are overwhelmingly negative. Cases in which users are only fluent in Arabic seem likely to result in a lack of engagement with Facebook. These users may be categorized as those with extreme reactions (losing control over their emotions). This reaction means that the users do not interact with Facebook often because of the translation issues.

“The translation makes me confused and do not motivates me to surf on Facebook”.
SS9_A_F

*“I try not to navigate too much in Facebook due to **misunderstanding** the icons and text”*. SS1_A_F

Poor translations can also cause complications with incorrect or misleading labelling of icons and text. These kinds of issues make it more difficult for users to make decisions and result in some users spending considerable amounts of time thinking about the mixtures of two languages and their meanings. All of these factors can lead users to disengage from Facebook.

*“Translation is an issue because, with navigation through the menus, it is **very hard to make the decision**”*. SS9_A_F

*“I don’t like to use Facebook because I the Arabic version, which is **complicated to interact with**”*. SS9_A_F

B. Using the English Version Because of the Issues Found in the Arabic version

Translation issues in the design of Facebook may lead to users’ dissatisfactions and negative attitudes towards the Arabic version. Therefore, many users may find the English version more to their liking, especially if they are familiar with the English language and have lived or currently live abroad. Facebook in English is the preferred

option for these individuals because they enjoy interacting with their friends and family on Facebook.

“I use Facebook in English because all my friends use English and I have English friends in Facebook”. SO2_E_M

These users do not object to the English version of Facebook either because they know English as a second language or because they want to match their friends in utilising the English version. The participants also claim to find that the English version is designed in a more convenient way, enabling them to more easily navigate the site, without the experience being distorted by inaccurate translation.

“Due to errors of translation, I prefer using the English version. It is better because the design is suited more to English text”. SO2_E_M

“I prefer the English layout, as it is more clear and easier to navigate”. SO1_E_M

“The issues of menu translation and positioning prevent me from using the Arabic version”. SO4_E_M

“The English version is designed better with its text. That is why I use the English version”. SO3_E_M

C. Accepting the Language Mistakes found in the Arabic Layout

As mentioned earlier, translation issues can lead to confusion and disengagement. However, not all users perceive the language issues (translation and alignment) to be problematic. The inaccuracies in terms of English-Arabic translation do not prevent these users from enjoying Facebook, even in circumstances in which they cannot read or understand English. In effect, these Facebook users may simply ignore any potential issues and instead concentrate on personal enjoyment, interest or pleasure they experience socialising with their friends. These users will continue to use Facebook because it enables them to interact with their friends and family.

“There are translation errors in the menus, home page and news feed. However, I have used Facebook for 9 years, and I got used to it”. SS3_A_E

“I do not read the errors that are found on Facebook, as long as I can see my friends’ posts and comments on the pictures and videos that are on their walls and can communicate”. SS5_A_E

“I got used to the Arabic translation found in Facebook. Therefore, it does not stop me interacting with my friends and family”. SS4_A_E

Interview summary

Analysis of the interview results demonstrated an overwhelming negative perception of the Arabic version of Facebook among Saudi participants. These feelings can be attributed to issues with the translation and its appearance, such as the icons and navigation. Overall, these problems seem to lead to feelings that the icons are irrelevant to their intended functions, feelings of being overloaded by the layout, feelings of confusion and a generally negative attitude towards the Arabic version. The feelings reflected in their behaviours ranged from moving to the English version, leaving to use other social media, staying but with less engagement, and simply accepting the problems.

In an attempt to triangulate these findings, the following section will discuss the results from the questionnaire to either confirm or critique the interview results and to quantitatively analyse the perception of Saudis.

4.4 Questionnaire One

This section will discuss the results from the first questionnaire. This survey sought to explore the interview results and improve their generalisability. Furthermore, given that the design issues are believed to be cultural, the analysis will focus on examining the differences in the results between Saudis who are living in Saudi Arabia and those who are living in other countries. The results will be presented as a t-test to determine similarities and differences between the answers of participants who are living in Saudi Arabia and those who are living abroad. The questions were based on Facebook elements and were designed to validate the issues raised by the responses to the interview questions.

Questionnaire One Participants

All the participants that completed this questionnaire were Saudi Arabian. A total of 350 participants were given questionnaire one, but only 200 (57%) completed and returned it. A total of 111 participants are living in Saudi Arabia and the remaining 89 participants are living in other countries. This enabled questionnaire one to effectively explore differences between these two groups concerning the Facebook user interface design.

The ages of participants ranged from 18–34 years, with 77% being in the 24–34 age group and having used Facebook for at least three years. This cohort was selected in response to the findings of earlier studies, which showed that Facebook was most popular among users between 26 and 34 years of age (Al Arabiya 2014). This is also the age group that most frequently uses Facebook in Saudi Arabia (Statista 2015). Therefore, the participants in this study comprise a good representative sample of Saudi Facebook users.

The representation of gender was fairly close among the Saudis living in Saudi Arabia (53% males to 47% females), however the ratio of those living abroad skewed more heavily towards male respondents (59% males to 41% females). This could potentially be attributed to the restrictions on Saudi women travelling abroad (Moghadam 2007). Table 13 shows the participants categorized by gender and country of residence.

	<i>Living in Saudi Arabia</i>	<i>Living outside Saudi Arabia</i>
<i>Male</i>	59	53
<i>Female</i>	53	36
<i>Total</i>	111	89

Table 13 Questionnaire One participants

Questionnaire One Results

The following are the results of Questionnaire One. These data contain numerous references to culture- and language-related issues that supplement the findings of the interviews. Overall, this questionnaire confirms the results of the interviews, especially concerning issues with icons and their labelling. A discussion of how users find the inaccurate translation confusing and the ways in which the Arabic user interface causes navigation issues is also provided.

4.4.1.1 Icon issues

To support the previous arguments from the interviews about the icons in section 4.3.1, a t-test was used with the data obtained from questionnaire one. The purpose of this analysis is to see whether a significant difference exists between participants who live in Saudi Arabia and those who live abroad. In addition, 84% of the participants found the images used on the icons to be irrelevant. Figure 18 shows the icons that is used on the current design of Facebook.



Figure 18 Icons used on the current design of Facebook

Furthermore, 72% of Saudis who live abroad felt the icons were a problem and 94% of those who live in Saudi Arabia felt it to be so (see Figure 19). The analysis shows that the difference in opinions between the two groups is highly significant ($P < 0.001$). In other words, Saudi users who live in Saudi Arabia (i.e. where cultural depth is high) are significantly more likely to perceive a lack of relevance between the images and the functionality of the icon.

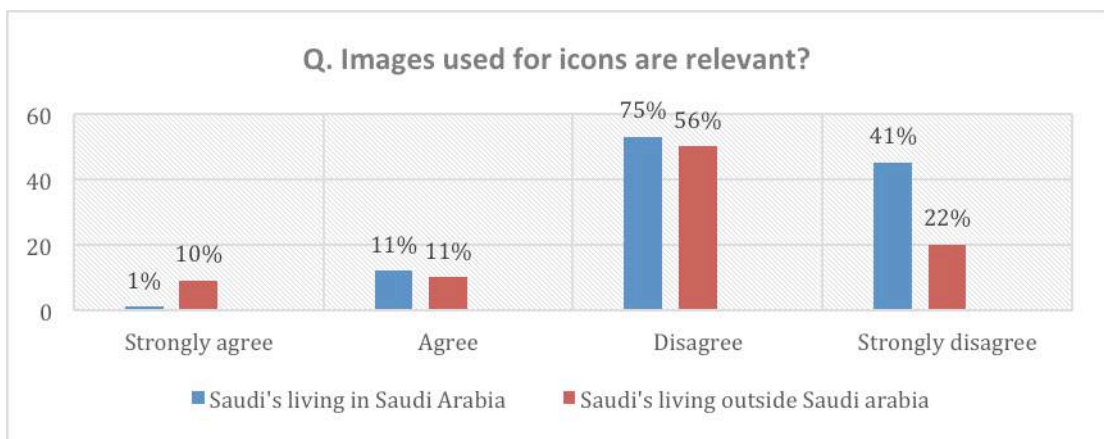


Figure 19 Participants views of the images used for icons

This is not the first research to identify and present the relationship between image familiarity used in icons and behaviour towards them. Another study in this area was conducted by McDougall et al. (2016), who illustrated that the relationship between

efficient performance and image familiarity with icons is an important predictor of icon appeal. This research extended McDougall’s findings to show that different behaviours emerged because of the inconsistencies in understanding the icons (i.e. Familiarity).

Labelling for icons

Participants commented that the labelling of the Facebook user interface affected their understandings of the icons. According to the results above (see section 4.3.2), the participants had particular issues with understanding the icon labelling. The findings of questionnaire one support this discussion. Figure 20 illustrates that 98% of participants living in Saudi Arabia and 94% of Saudis living abroad perceive the labelling of the icons to be irrelevant. According to the t-test, the differences between the groups was found to be significant, with its function of ($P < 0.00$). However, this may be attributable to the cultural adaptation of the icons.

Though significant differences has been found between the groups’ abilities to understand the labels, only a very small (4%) difference exists in terms of those liking and not liking the labels. This means that both groups agree that the labelling is irrelevant to page functionality. Therefore, the results extend the understanding of the responses from the interviews.

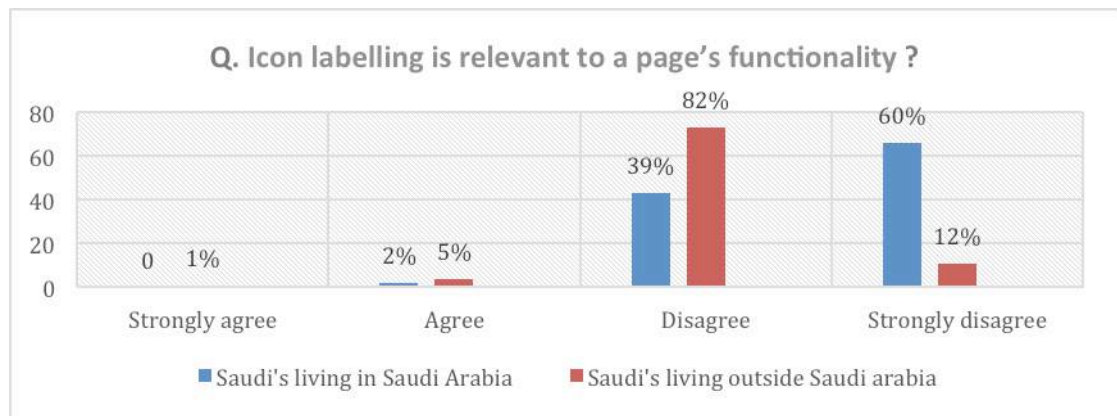


Figure 20 Participants’ views of the labels used for icons

4.4.1.2 Layout and Navigation

According to the navigation issues previously mentioned by the interviewees (see section 4.2.1.3), Saudi users have a negative perception of the density of information used in Facebook’s pages. Many seem to feel that they cannot cope with the diversity of options. The overall findings of questionnaire one showed that 84.5% of the

respondents dislike the navigation. More than 75% of users living in Saudi Arabia dislike the Facebook navigation in Arabic, while a slightly higher proportion (87%) of those living outside Saudi Arabia dislike the navigation in Arabic (see Figure 21). Therefore, Saudis living outside Saudi Arabia may have slightly higher expectations (+12%) of the Arabic user interface than Saudis living in Saudi Arabia. However, a t-test showed that no significant difference existed at $P > 10\%$ between the two groups regarding perceptions of the overall navigation experience.

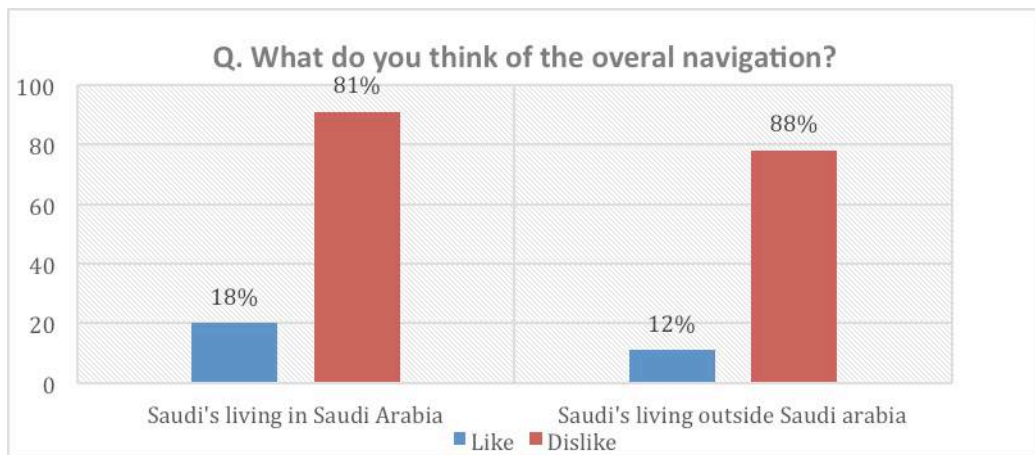


Figure 21 Participant's views of the overall navigation

It has also been found that the general perception is that the settings pages are excessively complicated, with 72% of those who lived in Saudi Arabia disliking the navigation of the settings page, in contrast to 65% of those who lived outside Saudi Arabia disliking it (see Figure 22). This means that though there is a generally negative perception, Saudis who live abroad are more likely to accept the complexity of the page than those who do not. This difference is significant ($P < 0.00$) with difference of 0.271 (out of the scale of 2). However, the overall percentages show that both groups dislike the settings page due to the various navigation issues that will be discussed in the next section.

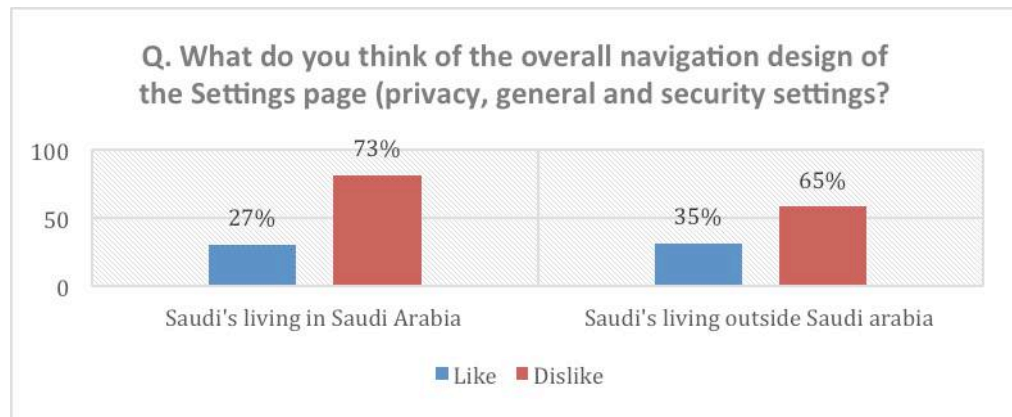


Figure 22 Participants' views of the navigation design of the settings page

Perceptions of Page Complexity

As mentioned in section 4.2.1.3, many participants reported the complexity of the pages led them to have navigation issues. Therefore, this questionnaire is an extension of the results that were raised in the interviews, where 77% of the respondents claimed that the layout of Facebook was difficult to follow (See Figure 23). No significant difference was found by the t-test between users living in Saudi Arabia and users living abroad. This may mean that the relationship between the cultural dimension and a preference for simple pages is not significantly moderated by the country in which a person lives, potentially even suggesting that the cultural factor is not affected by the experience of living abroad. However, both groups show a universally negative perception towards the clarity and presentation of the menus and links on the Home page and Profile page.

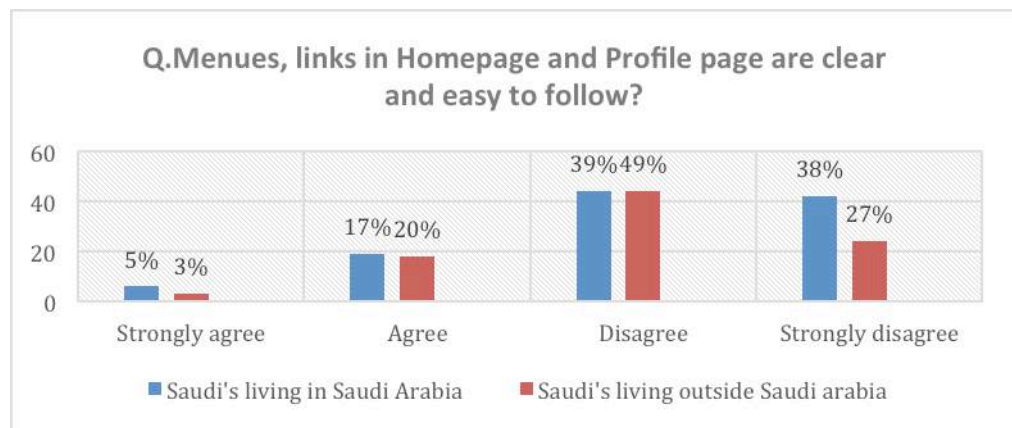


Figure 23 Participants' views about the menues, links and tabs on the profile page

Therefore, these results support the argument of the interview participants in section 4.2.2.3, who expressed a preference for fewer options in the menu on the settings page

due to the belief that this would help them navigate through the page with less confusion.

4.4.1.3 Language

According to the interview results (see section 4.2.2.4), participants had negative perceptions towards the Arabic version of Facebook due to the numerous inaccurate translations found in the text. This perception was exacerbated by issues that participants had with the alignment and positioning of the text. The following section will discuss these results in greater detail.

Arabic version of Facebook

This question identified that most participants disliked the Arabic version of Facebook, irrespective of whether they personally use it. A comparison of the results between the two groups shows that 74% of the participants who were living abroad held this belief, which closely matched the figure for those still living in Saudi Arabia (74.2%) (Figure 24).

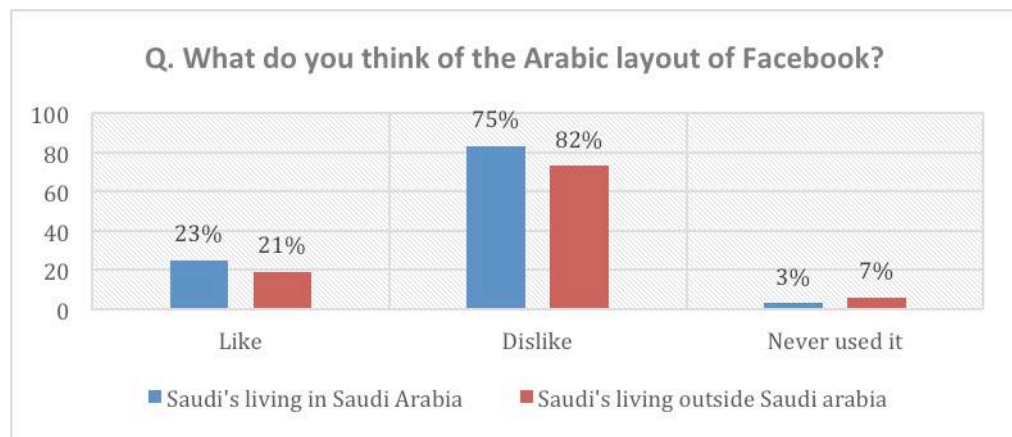


Figure 24 Participants' views of the Arabic version of Facebook

Figure 25 illustrates that 73% of the participants living in Saudi Arabia and 88% of those living outside Saudi Arabia preferred the English version of Facebook, perhaps due to a belief that it is designed better. This difference is highly significant $p < 0.001$, as Saudis living outside Saudi Arabia are more positively oriented towards the English version than their counterparts in Saudi Arabia, regardless of the language that they use when interacting with Facebook. However, the overall results show that participants

were overwhelmed, with 80% perceiving the English version to be better due to design elements being better suited to English.

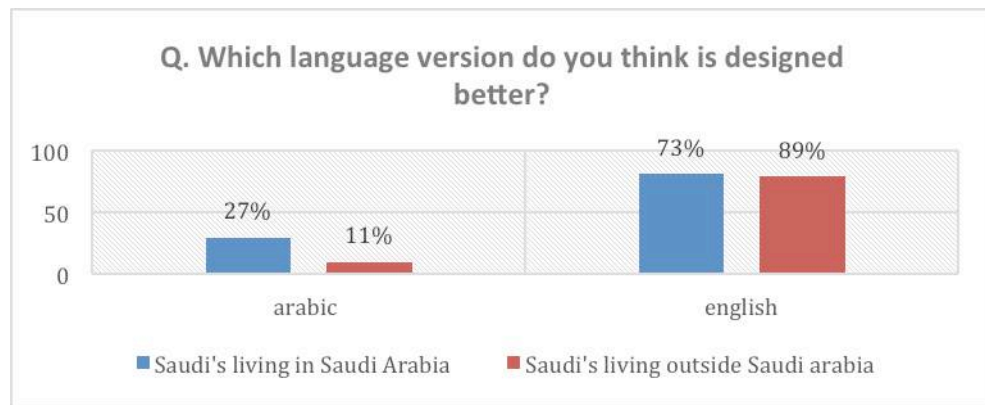


Figure 25 Participants' Facebook version preferences

Positioning of Text

The findings of the interview (see section 4.3.1.2) show that the participants had navigation issues related to the positioning of the Arabic text. This matter was addressed in the questionnaire with specific reference to the news feed, in an attempt to elaborate upon the results of the interview. Figure 26 illustrates that 96% of participants living in Saudi Arabia found the placement of elements difficult to follow, whereas only 62% of participants living abroad were concerned with this aspect. This shows that the participants living outside are less concerned with positioning, perhaps because they are more adapted to the orientation of English layouts. Therefore, in terms of accepting the positioning of the elements on the News Feed, a significant difference exists between those who live in Saudi Arabia and who live abroad ($P < 0.001$). However, both groups broadly believe that the Arabic text is not easy to follow.

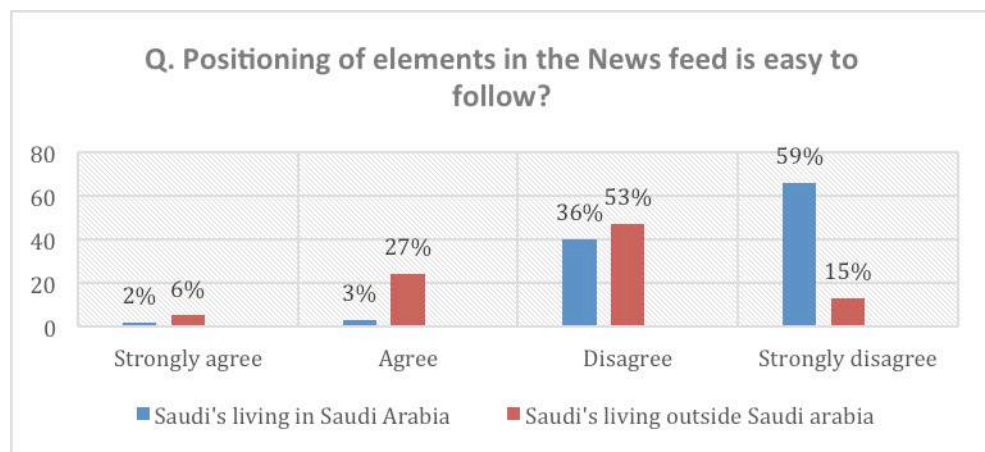


Figure 26 Participants' opinions of the layout of the News feed page

Similarly, Figure 27 demonstrates that 98% of Saudis living in Saudi Arabia dislike the positioning of the text displayed in the Settings page, whereas only 89% of Saudi living outside Saudi Arabia dislike it. This difference may be attributable to the flexibility of Saudis living in Saudi Arabia compared to those living abroad. Those who have experience with different cultures may also be more adapted to the potential range of navigation possibilities. However, both groups agree that the text positioning that is found in the settings page is problematic.

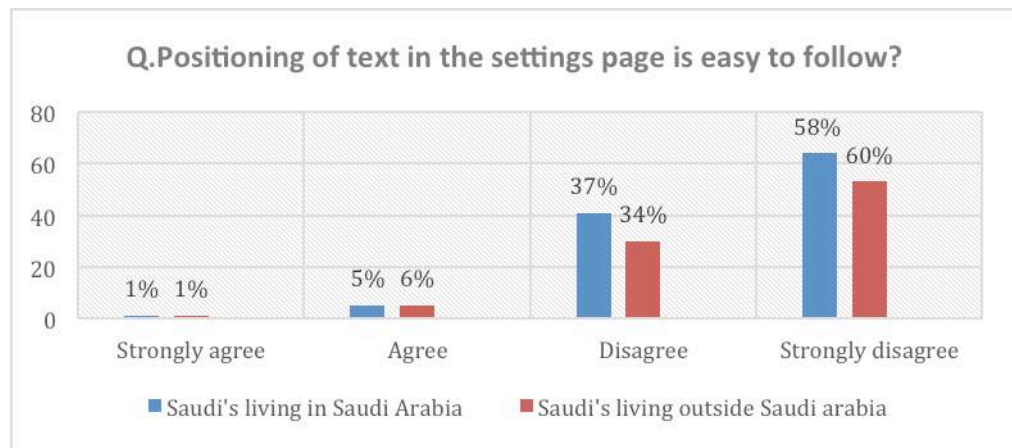


Figure 27 Participants' perspectives on the positioning of text on the Settings page

4.4.1.4 How Users Behave Towards the Arabic Version

Study participants perceive the translated text to be flawed due to inaccurate translations and inconsistencies. This is especially common among users living in Saudi Arabia, who are more likely to be strict about the correct translation of Arabic. Perceptions regarding the ease of use and relevancy of the settings page are also negative, as illustrated in Figure 28, where 96% of Saudis living in Saudi and 75% of Saudis living outside it disagreeing that the text on the settings page is easy to read. This difference is highly significant ($p < 0.001$) and indicates that Saudi users in the Kingdom experience more complications with the text content on the settings page than those abroad. Nevertheless, both groups share the opinion that text content on the settings page is confusing. Here, the results of this questionnaire have extended understanding of the responses from the interviews.

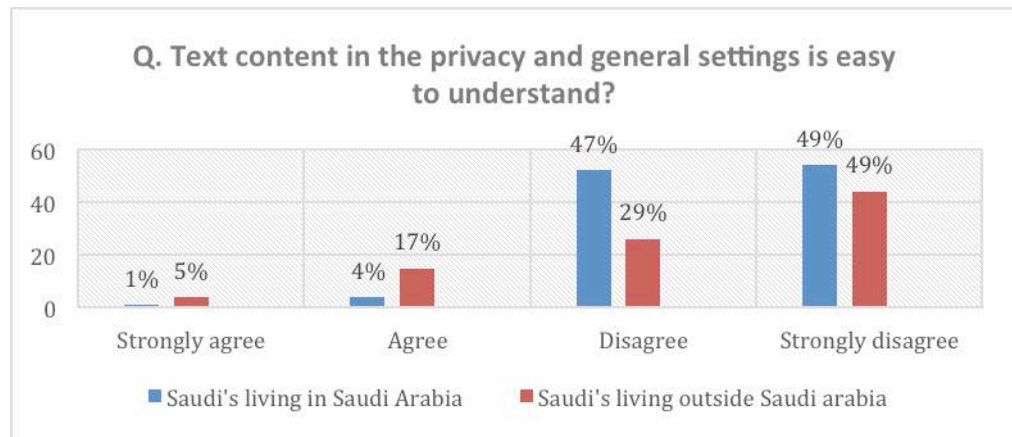


Figure 28 Participants views on the text content used in the settings

Questionnaire one summary

It has been identified that Saudis living abroad have different views of Facebook’s layout than those currently living in the Kingdom. This may reflect the effects of living in other cultures on the cultural dimensions and preferences of users concerning the layout, as discussed earlier in the literature (see section 2.4.1.2). Saudi culture scores high in power distance and uncertainty avoidance, suggesting that many Saudi people prefer less information and less complex user interfaces, unlike Western countries and cultures, who have lower power distance and uncertainty avoidance. This suggests that Saudis who live abroad are likely to accept page complexity and are less concerned with the Arabic text than Saudis living in Saudi. These findings were supported by the t-test shown above. In addition, Saudis living abroad are likely to be less concerned with the positioning of the page or the navigation experience than their counterparts in Saudi Arabia. However, the results show that neither group is truly satisfied with the layout and language of the Arabic version of Facebook.

Due to the need to confirm certain issues to answer the research objective, a supplementary survey was conducted. In the next section, a discussion will be provided of the findings of questionnaire two.

4.5 Questionnaire two

After analysing the data from the interviews and questionnaire one, it was determined that certain responses from the first questionnaire would benefit from further elaboration. Therefore, a second questionnaire was developed. However, this questionnaire was exclusively directed to participants who were living in Saudi Arabia.

The reason for this decision was that the first questionnaire determined Saudi participants had similar concerns with the elements found in the Facebook user interface, regardless of where they lived.

Questionnaire two Participants

Questionnaire two was sent out to 256 Saudi participants and was completed by 161 (62% response rate). Half (50%) of the participants were between 26–34 years old and 42% were female compared to 58% male (See Figure 29). In addition, 95% of the participants who completed questionnaire two have used Facebook for at least three years. A mere 26% of the participants commented or posted on Facebook less than once a month, whereas 36% of them used the platform 2-3 times a month, 16% posted or commented once a month, and 12% did it 2-3 times a week. Only 10% comment or post daily.

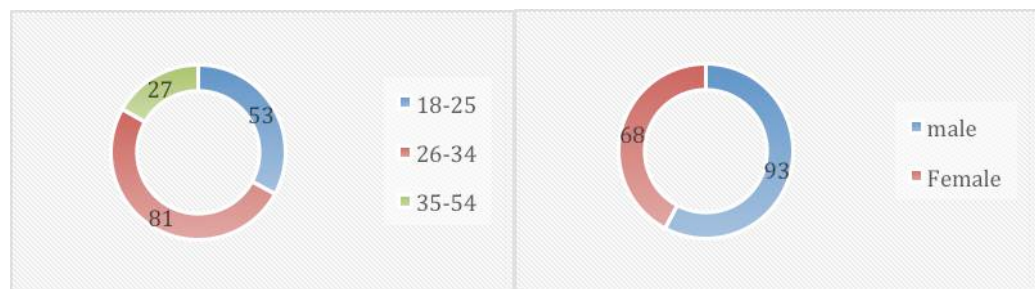


Figure 29 Questionnaire two sample characteristics

Questionnaire two results

This section will discuss the results from the second questionnaire in an attempt to verify and elaborate upon the interview and results from questionnaire one where possible concerning icons, information structuring, and navigation preferences.

4.5.1.1 Icon issues

The interview and questionnaire one results showed that the overall perception of the relevancy of Facebook’s icons negatively affected their use. This latter questionnaire confirms the confusion of users regarding their meaning, resulting in misunderstandings and navigation issues. As can be seen in Figure 30, most participants from questionnaire two have experienced confusion interacting with the menus on multiple occasions. These errors occurred due to misunderstandings about the intended meaning of certain icons. Almost half (44%) of the participants said that this happened to them often, 38%

said that this had happened a few times and the remaining 18% said that it had never happened to them. This kind of negative experience could be one of the main reasons for the negative attitude towards Facebook among Saudis.

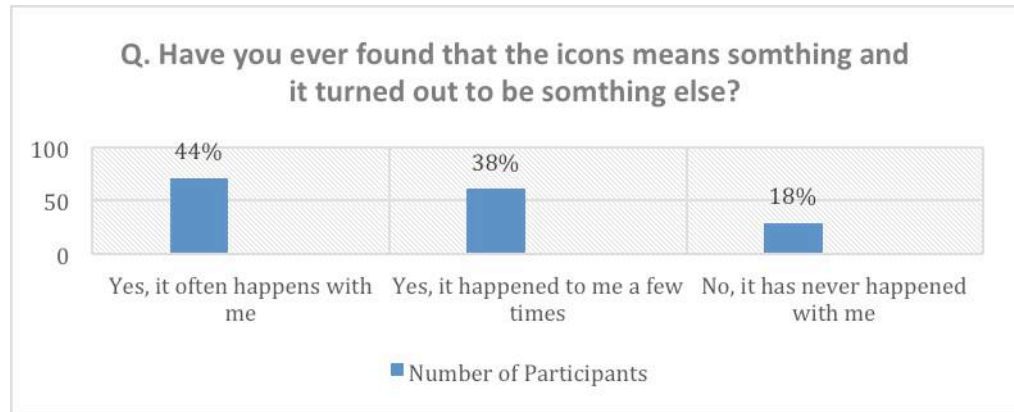


Figure 30 Participants’ view of how icons are confusing

Therefore, the data suggests that the context that represents the icons is as important as the icon itself. The majority of the participants would prefer the icons to be more intuitive, meaning more closely related to their cultural understanding, in the belief that this would help them better navigate through the interface. Therefore, this questionnaire also confirms their concerns of understanding the icons meaning. The vast majority (87%) of the participants stated a preference for the icons to relate more to their functionality to help them navigate through Facebook more effectively (see Figure 31).

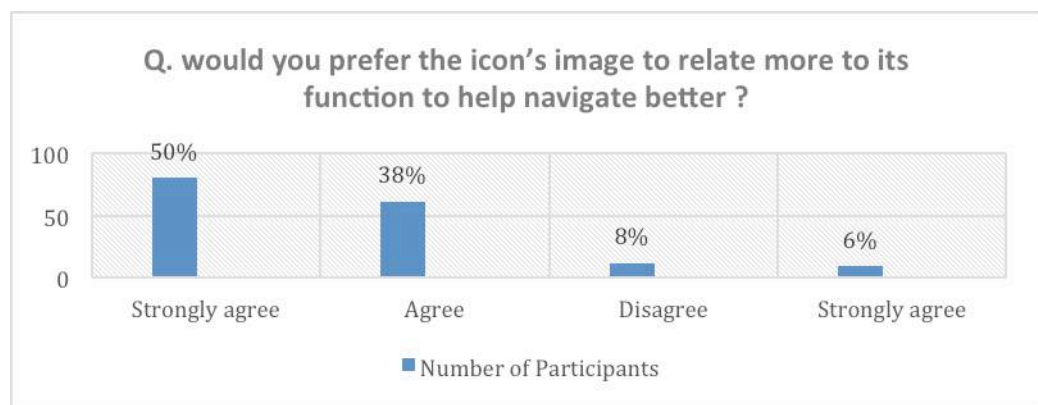




Figure 31 Participants prefer icons to relate more to their function

The findings of this questionnaire showed that most participants disliked even highly important icons, which should be understood by all users to navigate to the most important pages on Facebook. The ability to comprehend, learn, and recall the meanings of the images, especially if they are used for navigation, can be greatly improved by

providing images with descriptive text or labels (Galitz 2007). The familiarity of images is based on whether they have meanings in sociocultural contexts. The reason for the difficulties in understanding is likely due to differences in the background and experience of the designer's culture. For instance, the page feed's icon, namely an orange flag  Pages feed, is likely to make more intuitive sense in American culture because 'flagging' is a term used to mean 'reporting': i.e. flagging something means to draw attention to it. However, this is not the terminology that Facebook uses for this functionality. Instead, it has become a common term used to describe the action of notifying Facebook's staff of possible violations to its terms of use (Wright 2016). Likewise, the design of the 'Apps' icon  Apps is also very confusing to users. If the word 'Apps' was removed, it would be unlikely that this icon would be recognised as anything to do with Apps. Both of these icons were disliked by 94% of the respondents (see Table 14).

Exposure to a new icon that is not self-explanatory from the user's perspective often creates a negative impact on the attitude towards it, as mentioned in the literature (see section 2.2.1.1). Icons that are regularly used, such as the like page or the photo icon, are also more accepted than those that are less commonly used, such as the advertisement icon. However, the perception of these icons is still negative because more than 50% of participants expressed dissatisfaction with their designs. In essence, the main reason for disliking an icon is the image utilised, with Facebook engagement being a moderating factor that can decrease the impact of icons not being self-explanatory. These findings are limited to the Saudi context, where the level of uncertainty avoidance is high.

Icons in the News feed and Home page	Icons	Dislike
	Page feed	94%
	Like pages	59%
	Games	58%
	Photo	52%
	Page feed	83%
Icons in Settings menu	General	87%
	Privacy	94%
	Blocking	55%
	Notification	87%
	Mobile	51%
	Followers	93%
	Apps	94%
	Adverts	99%

Table 14 Degree to which participants disliked icons

The literature showed that when icons were too complex or too abstract to be judged immediately, they were rejected (see section 2.2.1.1); however, the current research found that when the motivation to use was higher, a user would adopt the new symbols of the images as they were and force themselves to acclimatise. As mentioned in the literature, symbols that lack ‘clues’ to their meanings must be learned. This takes the form of acclimatisation to the use and meaning of icons and understanding functionality without knowing the specific meanings of pictures. The clear example in this study is the ‘flag’ icon, which does not make any sense in Arabic culture. However, some users who are heavily motivated to use Facebook understand that the icon enables ‘feeding news’, regardless of the explicit meaning of the flag itself.

Analysis of the interviews and questionnaires has classified the behaviours of Saudi Facebook users by their ability to understand the icon system. The most prolific (extensive) users have been found to ignore the meanings of icons and get used to the issues, using them with an understanding of their functionality obtained by trial and error. In contrast, moderate users are motivated to use Facebook and look for alternatives to understand the icons, such as labels. For these individuals, the hedonic motivation and opportunity to connect with friends are bigger drivers than the risks of using vague icons. Finally, light users have insufficient motivation to use Facebook compared to their unwillingness to take risks and explore the icon system.

4.5.1.2 Layout and navigation

As mentioned in the interviews and questionnaire one results, participants suggested that fewer options in the menu of the settings page could potentially help them navigate the page with less confusion. The results of questionnaire two confirmed this, as 83% of the participants agreed that fewer menu options on the settings page would improve the navigation experience (see Figure 32).

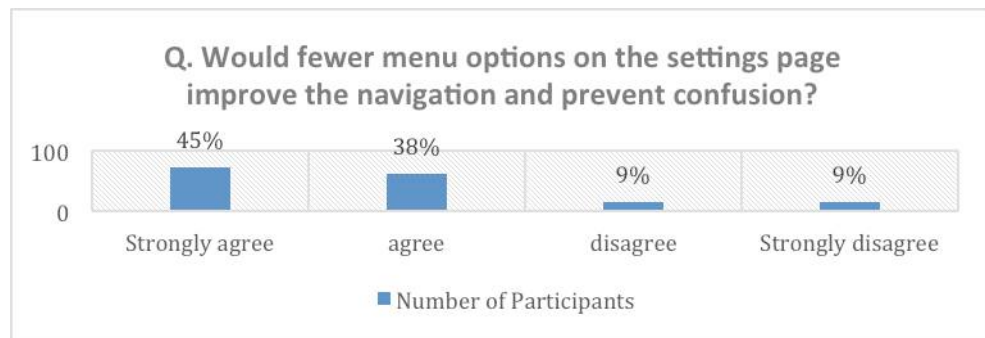


Figure 32 Participants' opinions of having fewer menu options on the settings page

In addition, this questionnaire shows that the majority of participants experienced difficulties remembering where things were located in Facebook's menus and settings page. Figure 33 illustrates that 92% of the participants would prefer less text on the settings page, 94% would prefer more separation between elements and 80% would prefer icons to represent information on the settings page.

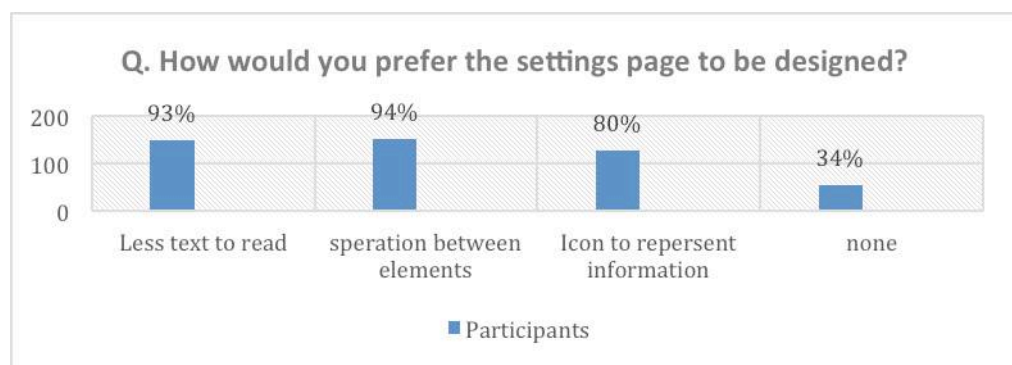


Figure 33 Participants' preferences for the design of the Settings page

4.5.1.3 Language

The language issues facing the Arabic version of Facebook have been identified on multiple occasions in this chapter. However, this question sought to obtain more specific details on which elements of Facebook are most problematic.

As mentioned in the interview, many Saudi users reported issues with understanding the language due to sentence structure. This was confirmed by participants from this questionnaire, as 60% found issues with the text above the ‘friends’ post. The fact that the text is written in both languages also seems to contribute to reading confusion. This is also the case with the text underneath videos, as illustrated in the Figure 34. The participants found the menu and descriptions confusing, as they were not. The also found that positioned to the right, and the mixed languages confused their navigation processes (see Figure 35).

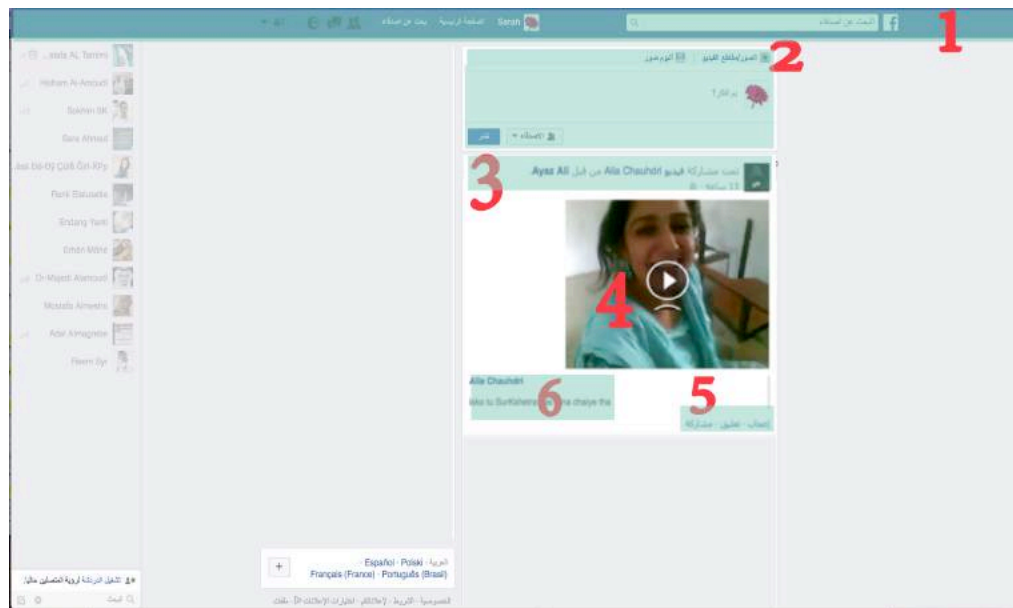


Figure 34 Elements found in the Home page

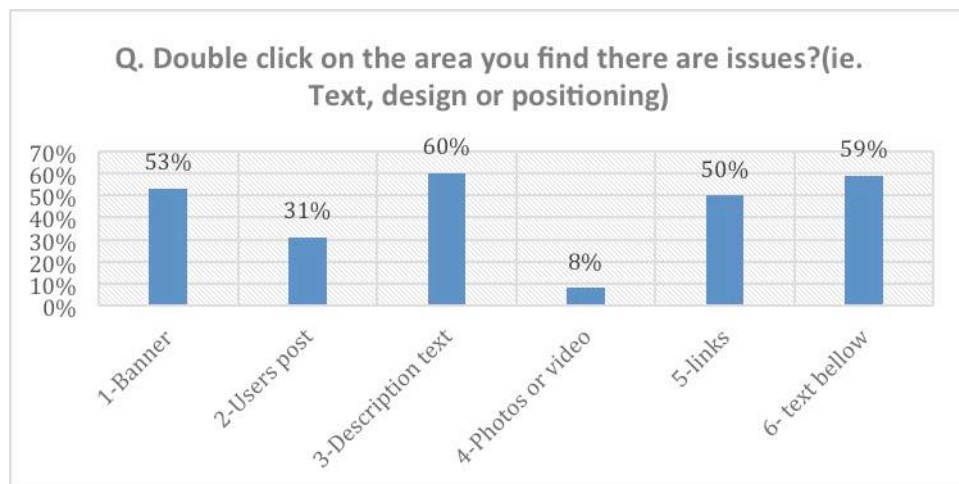


Figure 35 Participants' negative responses to issues they found on the Home page

The data from this questionnaire illustrates that two-thirds of participants (64%) found partial translation (mixing Arabic and English) confusing. In addition, 53% of participants had issues with the banner, perhaps because the main navigation functions on the banner in the Arabic version are positioned on the left, which conflicts with the navigation process of Arabic speaking users, which is from right to left (see Figure 36).

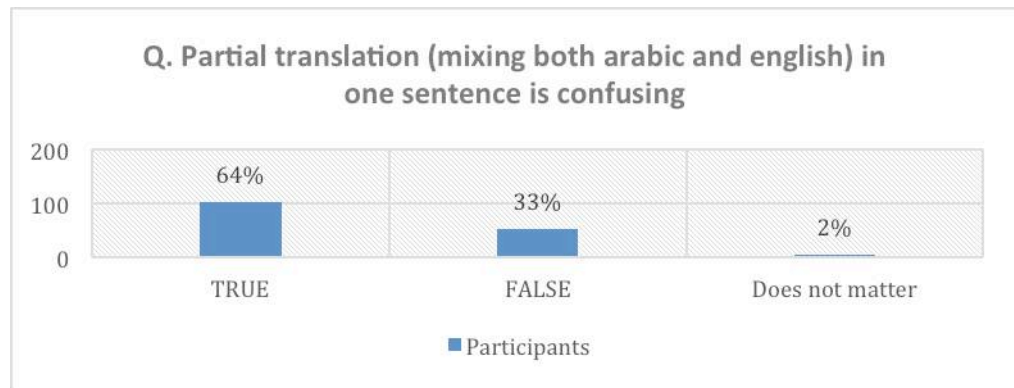


Figure 36 Participants opinion of the partial translation

Questionnaire two summary

Investigation of why participants have negative perceptions of the Arabic version of Facebook suggests that this stance was primarily driven by a lack of fit concerning the translation, the appearance of the site and the specific needs of Saudi Arabian culture. The perceptions of some participants who voiced complaints were driven by the appearance of the page, such as the navigation issues that occurred due to the icons and complexity of the settings page and newsfeed page. Additionally, the data also shows that many users are confused by the Arabic version of Facebook because of the presence of partial translation on the Facebook user interface design.

4.6 Chapter summary

This chapter aimed to understand the perspectives of Saudi Arabian participants. It attempted to analyse their views of Facebook’s design in general and the Arabic version of Facebook in particular. After examining the results from the interview and the questionnaires, t-tests were conducted to compare the perspectives of Saudis living in Saudi Arabia with those living in other countries. The findings show that Saudi users, irrespective of where they live, experience issues recognizing the icons, navigating through settings, positioning of elements in the news feed and reading text content found in the Arabic version of Facebook. However, these results may reflect user

preferences regarding the layout due to their cultural dimensions that may be affected by exposure to other cultures that have different dimensions (Crowne 2013). This study has recognised that negative perceptions of Facebook leads to differences in behaviour towards the programme. Users behave differently according to their levels of motivation and they either accept the issues, try to work with the design flaws, move to less complex social media sites or ultimately become less engaged with Facebook. In terms of the negativity towards the language translation, findings show that users accept the issues and ignore the translation problems, become less engaged with Facebook or simply begin to use the English version instead. Figure 37 illustrates the data collection phase that summarizes all the findings from this chapter. Having gained an insight into the particular problems facing the Arabic version of Facebook, the next chapter will present the proposed design guidelines that were developed out of the findings of this chapter.

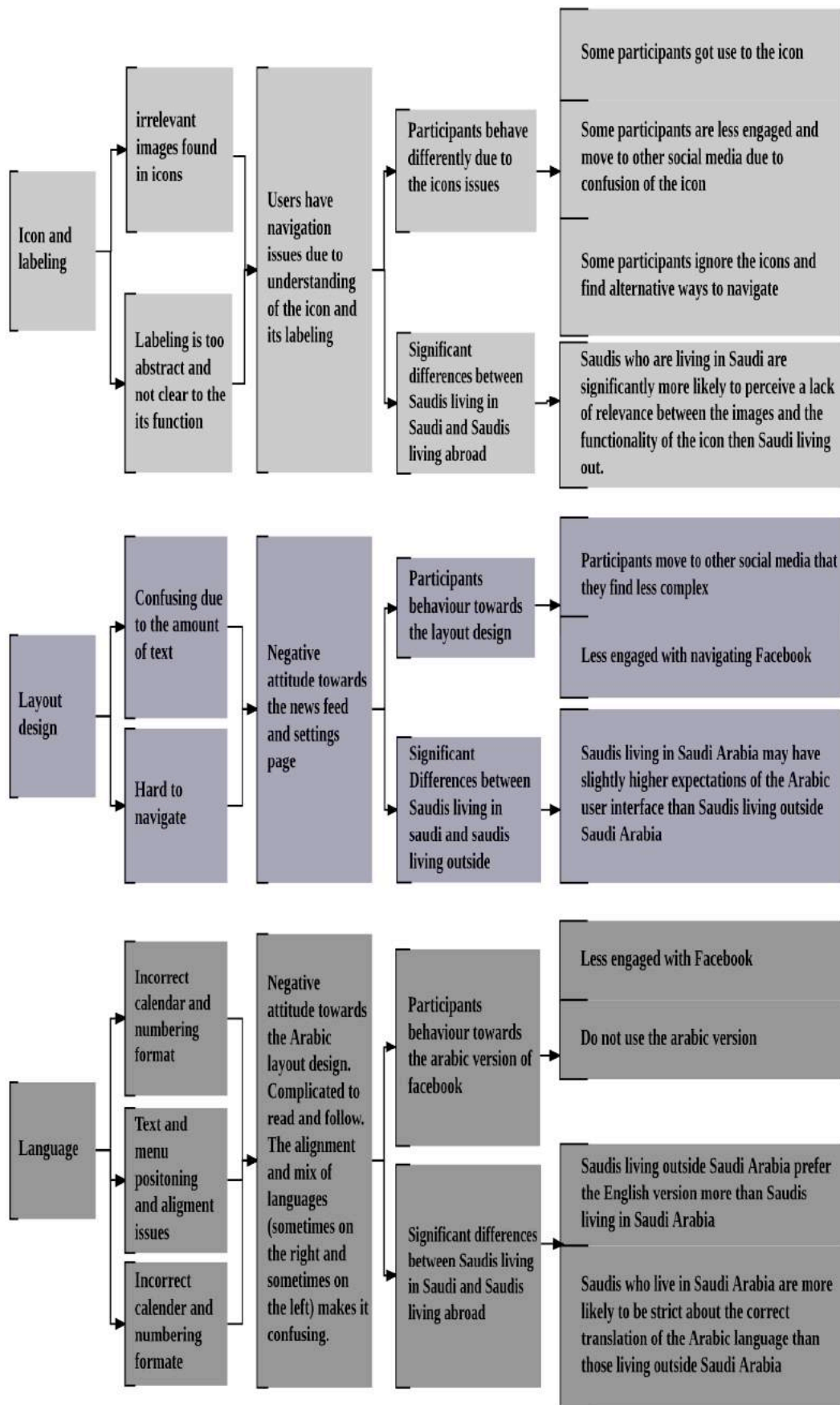


Figure 37 Chapter 4 summary

CHAPTER 5: DEVELOPMENT OF THE DESIGN GUIDELINES

5.1 Introduction

This chapter discusses the development of the design guidelines to serve as a set of how to design interfaces that suit Saudi users using the Arabic version of Facebook. It is not intended that this design guideline will serve as a comprehensive and inclusive design for all Facebook pages. Rather, it shows how these issues could be dealt with through the inclusion of new elements. The data show that there seem to be two core reasons for the prevalence of negative attitudes toward Facebook: that the design elements, such as icons and layouts, do not meet the cultural preferences and that there are problems with the translated/Arabic version of Facebook. The language issues are not only due to the structure of the language used, but also due to inconsistencies with the alignment of the text within the interface.

5.2 Design Guidelines Development

This chapter seeks to improve the initial design guidelines developed in the previous chapter through the addition of the last row, namely the solutions to the key problems. The first challenges are the cultural issues, such as the icon design and layout design, as well as the Arabic text alignment and translations of information such as the dates and calendar. This broad range of problems necessitates a number of different solutions. For instance, as shown, the lack of familiarity of the images to Saudis is improved by replacing the images with those from a Saudi context, which fit their mental models. Labels were also too abstract because they had been translated from a low context language (English) to a high context language (Arabic). In response to this issue, the text is increased and detailed. In addition, as the layout was perceived to be overwhelming and complicated, a number of methods are used to give the impression of simplicity and to reduce the quantity of content per page. Finally, certain important language issues, such as errors in translation and alignments, are fixed (See Figure 38).

	Icon Design			Layout			Language		
Problem	Not familiar with the images F1	Too abstract labelling F2		Complicated and complex layout F6			Arabic alignment and Structure of the language is left to right F10	Arabic Translation has mistakes F11	Right calendar and number format F12
Resolved by									
Solution	Images Understandable for Saudi's F3	Use Detailed labelling beside Images F4	Use Avatar (character) in the icon F5	Simple page: less menus and options per page F7	Vertical Design: to give more space F8	Less text and more picture in the settings function F9	Numbers and calendar: Islamic Calendars and Hindu numerals F13	Fixing partial and inaccurate translation mistakes F14	Alignment of Text: Right to left F19

Figure 38 Proposed design guidelines

Icon Solutions

Icons can be defined as the graphical representation of concepts that symbolize computer actions (Ware et al. 2014). Exponents of icons argue that iconic interfaces offer many advantages (Kim and Lee 2016), however, to have any advantages icons need to be easily recognised (Shneiderman 1997). To be effective, an icon must actually fulfil several criteria, including it being visible, legible, and comprehensible. Marcus (2001) recommends that a good icon should be simple and clear, which is important given that the visual and cognitive features of icons have been shown to significantly influence their effectiveness. Redesigning the Facebook icons and their labelling to suit the Saudi culture will improve the negative perception of and confusion caused by the icons used in the Arabic version of Facebook.

As shown in the previous chapter and in the proposed design guidelines above, the images used for icons may be unfamiliar to Saudi people and vague in terms of the understanding they evoke concerning the images' functionality. The proposed solution is to replace images that do not have any meaning in the Saudi context with others (F1 and F2). Therefore, avatars are introduced to facilitate greater understanding concerning the icons' functionality, which is supplemented with more detailed labelling. This problem is believed to be influenced by the cultural issues of uncertainty avoidance and power distance. As people with high uncertainty avoidance tend to avoid exploring new icons, their perception of confusion and tendency to avoid using Facebook will be higher than that of individuals with low uncertainty avoidance. Saudi people, as a

community, have low uncertainty avoidance, which in turn affects their overall usage of Facebook (see Table 15).

Proposed Design	Rational
More precise and detailed text in the labelling of the icon	To cater to users with high uncertainty avoidance by providing a label for the icon, which helps users identify the icon's purpose and avoid confusion
Any new or unfamiliar images are replaced	Because in the culture there is a tendency to avoid new things, this behaviour is mimicked in online context.
Using an avatar in the image of the icon	Uncertainty avoidance means the user avoids any environment he/she cannot cope with. Once the user understands the icon's meaning, they will be more likely to try using it.

Table 15 Relationship between culture dimension and preferred design

5.2.1.1 Familiarity

Images chosen by participants indicate an issue in understanding. Nevertheless, in Saudi Arabia, because of the uncertainty problem, the tendency to discover new images is low. Therefore, the icons were replaced with those deemed to have more meaning in Saudi culture. The case could be different in other countries, as people may have a greater tendency to explore the new images even when they do not have a clear reference in their culture (F3).

5.2.1.2 Labelling




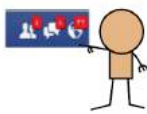




Given the nature of Arabic as an explicit language, the use of one word can be very confusing due to the greater existence of homonyms over most Latin root languages (Patterson 2015). Moreover, Arabic is homonymous (Alshamari 2015), which means one word has more than one meaning in different contexts (Shen 2016). For this reason, the description of the icon is improved by explicitly stating the meaning of each icon below it, such as replacing the labels 'General', 'Privacy', 'Mobile', and 'Page Feeds' with the labels 'Your Personal Settings', 'Your Privacy Settings', 'Your Mobile Settings', and 'All the Pages', respectively (F4).

5.2.1.3 Avatar

Previous literature has illustrated that avatars, which inform users about the likely outcome of using the icon, help many users select the correct icon (Hamilton 2009); (Alseid and Rigas 2011). The icons indicate the user's position in the icon's visual

content, and the symbols used in the icons will make sense, fitting the experience and background of the users.

There are three proposed and evaluated solutions. The first is to replace odd pictures with ones that suit the Saudi understanding of images. The second is to use avatars in the pictures thereby enabling users to understand what will happen after clicking on the icon (F5). The third is to detail the labelling by adding words to ensure the intended meaning is clear. Therefore, the position of the users is proposed in different icons such as general, block, mobile, followers, photos and adverts. Additionally, the content of the icons is replaced by the figure of a hand, which represents users interacting with the icon in the case of functions like apps, games and page likes (see Table 16).

Name and translation of the icon	Icon	Descriptions
معلوماتك الشخصية (General)		The general icon provides a brief written description of key information about the user. The labelling has been improved from 'general settings' to 'your personal Facebook settings'. The label here has more words to clarify and avoid potential misunderstandings. The proposed icon also helps users to identify the purpose of the link.
اعدادات الخاصه (Privacy)		The privacy icon represents the ways in which user accounts can be protected such as passwords and access given to others. The previous icon used a padlock to illustrate privacy. However, the key in Saudi culture means 'privacy'. The proposed icon illustrates this concept more effectively. It consists of a padlock image with words 'prevent from entering' behind it. Labelling is also improved to 'your privacy settings'.
منع الناس من التصفح (Block)		The block icon limits the visibility of posts between the user and their friends. The 'block' icon in the current design is similar to a red 'do not enter', which is too abstract for many Saudi users. Therefore, the proposed icon superimposes a black 'not allowed' symbol over a group of avatars. The translation has been changed to 'block people from navigating your pages'.
اعدادات الاشعارات (Notification)		The notification icon enables Facebook notification settings and all corresponding alerts to be changed. The translation has been improved to show three main words, 'your notification settings'. An avatar is also used to show the user what 'notification' means. By using an avatar, it becomes easier to know which things will be changed by using this icon.
اعدادات الجوال (Mobile)		The mobile icon enables users to edit their mobile settings through Facebook. The image is used to reflect 'your mobile phone', because Arabic culture uses the image of a hand to represent the concept of 'your'. The name of this icon is improved to include three main words, 'your mobile settings'.
الاشخاص اللذين يتابعونك (Followers)		The follower icon notifies the user about his/her Facebook followers. In Arabic culture, the queue means 'followers', so the image now used is a depiction of a queue. The label, 'followers', has been changed to 'the people who follow you', clarifying that it is not the user who follows others but others who follow this user.
برامج والتطبيقات (Apps)		The application icon presents lists of available third party applications plus related settings and notifications. The design of the applications icon was based on an array of icons with a hand illustrating that they can be selected.
تطبيقات الاعلانات (Averts)		The advertisement icon represents the settings where users can edit notifications for adverts when using Facebook. It also enables users to advertise their products and services via Facebook. Traditionally, in Saudi culture, ads are listed on tables in streets. Therefore, since users recognise this format more easily, an icon of an advertisement sign is





		used.
برامج الالعاب (Games)		This game icon enables users to edit and add entertainment facilities to their Facebook accounts. The image of a computer-like avatar playing with a controller may help participants better understand the icon's function.
صور التي حملتها (Pictures)		The pictures icon allows users to upload or view the pictures they share or store on their own Facebook page. Therefore, the proposed design depicts an avatar holding a camera, which may make it easier for users to identify the functionality of the icon. Labelling is improved to state, 'the pictures you uploaded', instead of the current label, which is confusing to many Saudis.
جميع الصفحات (Page feed)		The page feed icon represent users editing and adding 'pages' to which the user has subscribed. It is also where users create Facebook pages. The proposed labelling of the page feed icon is 'create a page', with an icon depicting a page and a hand pointing to the create option.
فحات التي اعجبته بها (Pages likes)		The 'page like' icon is used to manage settings about the pages that the user or their friends have liked. The proposed design for this icon is an example depiction of a page, superimposed with a hand avatar displaying a like symbol to represent the users liking the page. The proposed labelling is also translated as 'pages you have liked', which better illustrates the functionality of the icons.

Table 16 Proposed design solutions for the icon

5.2.1.4 Icon Design Discussion

According to the literature, a number of different ways to make icons clearer and easier to understand exist. Examples of these strategies include placing a border around a graphical icon to attract participants' attention (Huang and Chiu 2007), using simple images with fewer elements (McDougall and Isherwood 2009), or using a more limited colour palette (Choi and Bakken 2010). This research proposes to replace images with other images deemed more understandable by Saudi culture. Further, avatars are used to clarify what will happen to the user and what his position in the system will be by clicking on the icon. This decision has been made in an attempt to remove uncertainty, because users from cultures with high uncertainty avoidances tend to prefer removing all elements of risk from their decisions (Zhao 2011) and having a clear idea of location both in terms of physical layouts such as houses or urban planning and virtual layouts such as computer systems (Reinecke 2013). Therefore, this research extends beyond what has been identified in the literature by designing an icon with an avatar, which enables a user's processor to reflect that user's status (Jolliff et al. 2008).

Another method used to improve an icon's clarity is labelling (Magouyrk and Parish 2016). There are different approaches and considerations in labelling improvement such as using bigger fonts for older users (Zhou et al. 2014). Furthermore, labelling is removed in illiterate cultures, which focus solely on the use of images (Yamamoto 2015). Others focus on minimising words in labelling, encouraging users to perceive the design as simple or elegant (Pennings et al. 2014). However, this research has found that using detailed labels is more useful in Arabic, because Arabic has more homonyms than many Western languages, and so, requires more words to avoid vagueness or misunderstandings.

Layout Design Solution

As discussed in section 3.3 and illustrated in the proposed design guidelines above, individuals who score highly in the uncertainty avoidance dimension prefer formalized rules, structures, and procedures (Hofstede 1980; Fang et al. 2011). An effectively structured interface that follows well-accepted procedures tends to be received positively by people who have high uncertainty avoidance (Amster and Böhm 2016). Interfaces designed to suit cultures with a high level of uncertainty avoidance should focus on the prevention of user confusion through the provision of minimal, focused menu options, supplemented with simple and descriptive help facilities, as well as a navigation structure that seeks to prevent users from getting lost (Hoehle et al. 2015).

5.2.1.5 Simple Layout Design

The main issue raised by participants in the interviews and questionnaires pertained to their perceptions of the page's complexity and over-crowdedness. These perceptions can be linked to Saudi people's nature, because this concept has not been raised in Western studies. This may potentially be attributable to the power distance of Saudi Arabian culture. In the communities with high power distances (Shearmur and Doloreux 2015), employees and students are expected to receive few, clear orders from those who are higher in the hierarchy. This community behaviour is often replicated in virtual life, where Saudi people feel uncomfortable with pages that offer many choices; therefore, they tend to prefer pages with fewer options and links (F6). The perception of crowdedness is psychological; there are four proposed approaches to help decrease this feeling. As shown in the proposed design guidelines above, the first approach (F7) is, in addition to using drop-down menus, physically reducing options to save space and make

pages simpler, as well as limiting navigation possibilities per scene. The second approach (F8) is using vertical menus to give the impression of more free space on the page (Leuthold et al. 2011). The next strategy is having sections that split options to give the impression of greater page organisation. The last approach (F9) is using visual examples to reduce the quantity of text by using more images (see Table 17).

Preferred Design	Rationale
Linear navigation and fewer menu options (a less complex interface)	Users are less tolerant of complex interfaces that have too much information and options.
Visual examples by adding an example of what the page looks like before clicking on the icon to deliver the message	To give users the perception of ease and eliminate uncertainty
Vertical Menus	To give the impression of more free space
Sectioning each element separately	To give the impression of being more structured and organised

Table 17 Saudis preferences and rational of the layout design

The perception that the user interface is difficult to navigate and confusing to users can explain this. The primary aim of the settings page design guideline is, therefore, to address the challenges highlighted by participants with regard to these issues. Table 18 illustrates the current layout of the settings page in the English and Arabic versions of Facebook, along with the proposed design and an explanation of the changes made to the original. The focus group participants expressed a positive attitude towards the new layout, noting that the modified orientation helped with their navigation experience, the clarity of the text, and allowed more space on the page.

Original version (English layout)

General Account Settings		
Name	Sarah Rayahn	Edit
Username	http://www.facebook.com/sarah.rayahn	Edit
Email	Primary: sarahrabtsony@gmail.com	Edit
Password	Password never changed.	Edit
Networks	No networks.	Edit
Language	English (UK)	Edit
Temperature	Celsius	Edit

[Download a copy of your Facebook data.](#)

Existing Arabic version



Proposed Arabic version



In the proposed section, the following actions were taken:

- Each element was given a separate section.
- The menu was designed vertically.
- A representative image was added.
- The quantity of text was reduced.
- The interface was simplified using buttons and dropdown features.

Table 18 proposed Layout design of the setting page

5.2.1.6 Layout Design Discussion

Different cultures typically prefer different layout designs. The challenge in this context concerns understanding Saudi users' layout design preferences and how the design can affect their behaviour. For instance, there is conflicting advice on how many items to present in an interface at a time. For navigation systems consisting of dozens or hundreds of items, a well-structured navigation system is an important way to reduce complexity while enabling the user interface to be used and tasks to be completed (Leuthold et al. 2011; Tsopra et al. 2014). Indeed, these findings are generalised in some Western and Eastern cultures (e.g. China), which have demonstrated a preference for complicated, information-rich interface designs (Lindgaard 2006). However, in Saudi culture, people prefer fewer elements on any given page with fewer options from which to choose. They feel overwhelmed by a large number of options, even when these are well organised, as in Facebook's case.

This research proposes that the nature of high power distance amongst Saudi people has implications on their preferences and understandings of the layout and interactions in Facebook's interface. Studies have shown that the higher the power distance, the less information followers expect (Merkin 2006). Therefore, the interface designs hierarchy (MacDonald 2015). This decision is informed by the users' stated preferences, which suggest that a single-level data hierarchy would be better for them. For this reason, it is proposed that drop down menus will ease Saudi users' navigation process.

Lidwell et al. (2010) claim the perception of each user involves the use of senses to detect information, which in turn allows the detection of a good or bad design. This research has identified that Saudi users typically find Facebook's design to be complex and have a negative perception associated with confusion and frustration in its use. Current literature asserts the psychological responses to a user interface's poor design can include confusion, annoyance, frustration, panic or stress and boredom (Galitz 2007), which leads to differences in attitudes and behaviour (Kastanakis and Voyer 2014). Therefore, by localizing the user interface to suit Saudi culture, different elements need to be designed to better suit the target culture.

Language Solutions

The findings in the previous chapter and in the proposed design guidelines above illustrate that language issues distort the user's experience and decrease his/her level of engagement. The language issues are related to alignment (F10), problems with translation (F11), and the way in which the format of time, cost and locations are presented (F12). These language issues further create problems relating to vagueness. The following sections provide a more detailed discussion of these problems and their solutions.

This study proposes two solutions in response to the confusion that arises due to the alignment and positioning of Arabic words on Facebook pages. The first solution aligns everything right to left, including the page contents, pictures, buttons and hyperlinks. The second solution increases the amount of space between words, recognizing that Arabic calligraphy generally needs more space than its Latin equivalent.

To help Saudi Arabian users navigate the page more efficiently, the menu and context were placed on the right side—the same orientation as Arabic (the users' native language) (Han and Northoff 2008). A user tends to navigate according to his/her own language, because reading orientation is responsible for temporal ordering (e.g. people who read from right-to-left will arrange events so that time proceeds from right to left). Chan and Bergen (2005) argue that it is crucial to understand the difference in visual attention for users who surf right to left instead of left to right. Therefore, the proposed design makes changes to the layout, including menu links written in Arabic and positioned on the banner's right side instead of left, as well posts on the newsfeed. This is better suited to the text in Facebook's Arabic version. Therefore, in an attempt to improve the navigation, the alignment of the text and inaccurate translations need to be considered.

5.2.1.7 Inaccurate Translation of the Date and Time

As shown in the proposed design guidelines above, the translation of the calendar and numbers were improved to prevent the dissatisfaction voiced by the users of the Arabic version of Facebook. Adopting a format that enables the correct date and time to better fit to the expectations of users may solve the issues that Saudi users are having with the Arabic version of Facebook. Therefore, the use of the Islamic calendar, which is used in

Saudi culture, should help users be more comfortable in understanding the calendar format (F13).

Examples of inaccurate translations for dates can be found in the current user interface. This can be extremely confusing for users who are accustomed to a different calendar, resulting in corresponding navigation issues when using the interface. These issues can be corrected by utilising the Islamic calendar rather than the Georgian calendar (See Table 19).

Original version (English layout)																																																																												
Dates	Minutes	Hour																																																																										
Feburary 15 at 23:27	2 minutes	2 hours																																																																										
December 20, 2014	4 minutes	3 hours																																																																										
	6 minutes	6 hours																																																																										
		7 hours																																																																										
Existing Arabic version	Proposed Arabic version																																																																											
<p>Wrong dates</p> <p>15 فبراير، الساعة 11:27 مساءً ·</p> <p>20 ديسمبر، 2014</p>	<p>Wrong minutes</p> <p>2 دقيقة ·</p> <p>4 دقيقة ·</p> <p>6 دقيقة</p>	<p>Wrong hour</p> <p>2 ساعة ·</p> <p>3 ساعة ·</p> <p>6 ساعة ·</p> <p>7 ساعة ·</p>																																																																										
<table border="1"> <thead> <tr> <th colspan="5">Date and time</th> </tr> <tr> <th>Islamic Date</th> <th>Date Islamic and English</th> <th>Days</th> <th>Hours</th> <th>Minutes</th> </tr> </thead> <tbody> <tr> <td>مُحَرَّم</td> <td rowspan="2">١٤٣٦/٢/٠٣ or ١٢/٠٣/٢٠١٥</td> <td>السبت</td> <td>ساعة ١٤</td> <td>دقيقة</td> </tr> <tr> <td>صَفَر</td> <td>الأحد</td> <td>ساعة ١٥</td> <td>دقيقتين</td> </tr> <tr> <td>رَبِيعِ الْأَوَّلِ</td> <td></td> <td>الاثنين</td> <td>ساعة ١٦</td> <td>٣ دقائق</td> </tr> <tr> <td>رَبِيعِ الثَّانِي</td> <td></td> <td>الثلاثاء</td> <td>ساعة ١٧</td> <td>٤ دقائق</td> </tr> <tr> <td>جُهَادِي الْأَوَّلِي</td> <td></td> <td>الأربعاء</td> <td>ساعة ١٨</td> <td>٥ دقائق</td> </tr> <tr> <td>جُهَادِي الثَّانِي</td> <td></td> <td>الجمعة</td> <td>ساعة ١٩</td> <td>٦ دقائق</td> </tr> <tr> <td>رَجَب</td> <td></td> <td></td> <td>ساعة ٢٠</td> <td>٧ دقائق</td> </tr> <tr> <td>شَعْبَانَ</td> <td></td> <td></td> <td>ساعة ٢١</td> <td>٨ دقائق</td> </tr> <tr> <td>رَمَضَانَ</td> <td></td> <td></td> <td>ساعة ٢٢</td> <td>٩ دقائق</td> </tr> <tr> <td>شَوَّال</td> <td></td> <td></td> <td>ساعة ٢٣</td> <td>١٠ دقائق</td> </tr> <tr> <td>ذُو الشَّعْدَةِ</td> <td></td> <td></td> <td>ساعة ٢٤</td> <td>١١ دقائق</td> </tr> <tr> <td>ذُو الْحِجَّةِ</td> <td></td> <td></td> <td></td> <td>١٢ ساعة</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>١٣ ساعة</td> </tr> </tbody> </table>			Date and time					Islamic Date	Date Islamic and English	Days	Hours	Minutes	مُحَرَّم	١٤٣٦/٢/٠٣ or ١٢/٠٣/٢٠١٥	السبت	ساعة ١٤	دقيقة	صَفَر	الأحد	ساعة ١٥	دقيقتين	رَبِيعِ الْأَوَّلِ		الاثنين	ساعة ١٦	٣ دقائق	رَبِيعِ الثَّانِي		الثلاثاء	ساعة ١٧	٤ دقائق	جُهَادِي الْأَوَّلِي		الأربعاء	ساعة ١٨	٥ دقائق	جُهَادِي الثَّانِي		الجمعة	ساعة ١٩	٦ دقائق	رَجَب			ساعة ٢٠	٧ دقائق	شَعْبَانَ			ساعة ٢١	٨ دقائق	رَمَضَانَ			ساعة ٢٢	٩ دقائق	شَوَّال			ساعة ٢٣	١٠ دقائق	ذُو الشَّعْدَةِ			ساعة ٢٤	١١ دقائق	ذُو الْحِجَّةِ				١٢ ساعة					١٣ ساعة
Date and time																																																																												
Islamic Date	Date Islamic and English	Days	Hours	Minutes																																																																								
مُحَرَّم	١٤٣٦/٢/٠٣ or ١٢/٠٣/٢٠١٥	السبت	ساعة ١٤	دقيقة																																																																								
صَفَر		الأحد	ساعة ١٥	دقيقتين																																																																								
رَبِيعِ الْأَوَّلِ		الاثنين	ساعة ١٦	٣ دقائق																																																																								
رَبِيعِ الثَّانِي		الثلاثاء	ساعة ١٧	٤ دقائق																																																																								
جُهَادِي الْأَوَّلِي		الأربعاء	ساعة ١٨	٥ دقائق																																																																								
جُهَادِي الثَّانِي		الجمعة	ساعة ١٩	٦ دقائق																																																																								
رَجَب			ساعة ٢٠	٧ دقائق																																																																								
شَعْبَانَ			ساعة ٢١	٨ دقائق																																																																								
رَمَضَانَ			ساعة ٢٢	٩ دقائق																																																																								
شَوَّال			ساعة ٢٣	١٠ دقائق																																																																								
ذُو الشَّعْدَةِ			ساعة ٢٤	١١ دقائق																																																																								
ذُو الْحِجَّةِ				١٢ ساعة																																																																								
				١٣ ساعة																																																																								
<p>In the existing Arabic version, the dates and times are not translated correctly. The proposed version has corrected this.</p>																																																																												

Table 19 Proposed correction calendar format to suit Saudi culture

Translation: Partial Translation and inaccurate translations

As shown in the proposed design guidelines above (F14), fixing the partial translation and displaying the context in a way that better suits Saudi participants may improve their navigation experience, as the confusion that can arise from inaccurate or incomplete translation can ruin a user's experience, creating confusion about options or content (Shneiderman 2010).

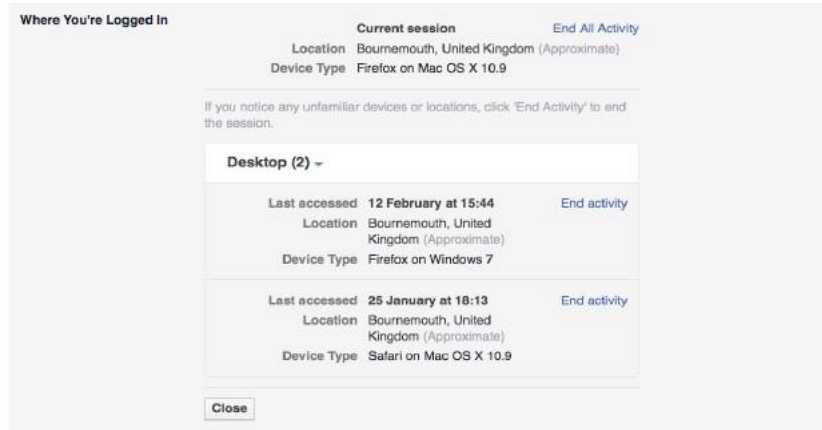
The use of the right number format and the text equivalent (F15) will prevent multiple languages being mixed within a single sentence. It should also solve issues regarding the orientation and positioning of menus, links, and texts (F13). By shifting these to the right to match Saudi users' navigation and reading processes, the users' cognitive process should be easier and the interaction with the website improved (see Table 20).

Numbering: calendar and numeric system

Saudi Arabia, as discussed in section 2.4.2, uses the Hijri calendar instead of the Gregorian calendar. The correct numbers and calendar are formatted correctly, which should improve Saudis' understanding when reading posts, communicating with users and interacting with other design elements.

In this revised page, all elements are considered and fixed. The data from the interviews and questionnaires indicate this page is not used at all, largely because it is perceived as overly complicated. This discourages users from exploring or using its options. Numerous participants indicated that they experienced issues with changing their Facebook settings, because they were confused by the navigation. To help resolve this issue, the sub-menu in the proposed design has been redesigned in such a way that no partial translation exists as illustrated in Table 20.

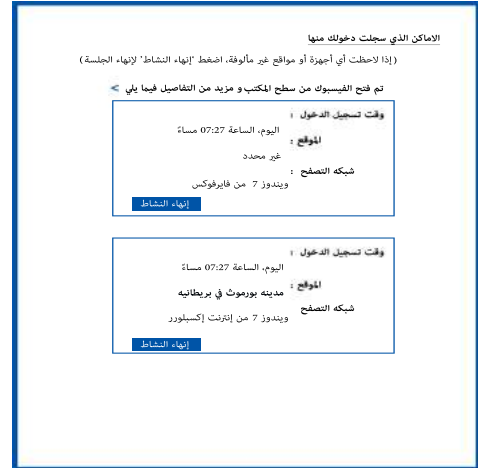
Original version (English layout)



Existing Arabic version



Proposed Arabic version



The proposed section includes the following changes:

- More relevant Arabic words are used and partial translations are fixed.
- Text is reduced and more space is included around the Arabic words.
- Layout design is improved by placing a border and buttons instead of links.

Table 20 Proposed new sub-menu found in Settings Page

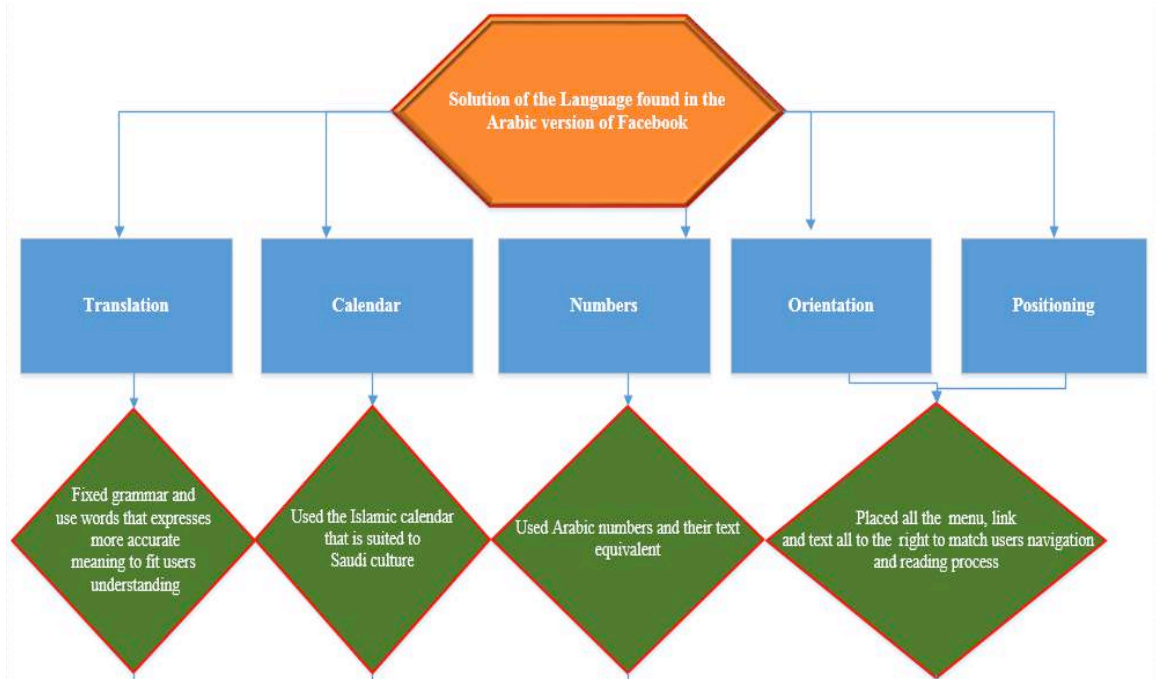


Table 21 proposed Arabic language solutions that suits Saudi culture

5.2.1.8 Fixing Alignment: Evaluation of the Design of the Layout of the Home page

As discussed in section 2.43 of the literature, the Arabic language is written from right to left. Therefore, all the elements and texts should be aligned from right to left to match Arabic users' natural reading direction. However, in the current version, certain factors are written from the right, while others are written from the left in the traditional Western style. The fusion of styles creates user confusion (see Table 22).

Original version (English layout)	
	
Existing Arabic version	Proposed Arabic version
	
<p>In the proposed user interface, the following was changed:</p> <ul style="list-style-type: none"> • English words were translated and aligned to the right to prevent confusion. • All Arabic language translations were clarified. • The text and icons in the banner were moved from the left to the right to suit the alignment of Arabic text. 	

Table 22 Proposed design of the language issues found in the Home page

The comprehensibility of the text was also improved by positioning all Arabic words to the right and allowing more space between elements thereby increasing legibility and improving navigation (F15). This is especially important in the context of Arabic, because it needs more space than written English in the context of user interface design (Ishida 2017). It is also important to bear in mind that Arabic fonts are usually four points larger than the equivalent English font (Alsumait et al 2009) (see Table 23).

Preferred design	Rationale
Align everything to be right to left	This gives a consistent navigation and readability, improving the clarity of the text and the page contents.
Increase space between words	To improve the comprehensibility of the text and improve navigation, because Arabic calligraphy needs more space than the English languages.

Table 23 Preferred design to suit Saudi culture

5.3 Chapter Summary

The aim of this chapter was to resolve the issues identified in Chapter 4, specifically the challenges reported by Saudi users concerning the layout and translation of the Arabic version of Facebook. Therefore, a proposed solution of fixing icons, layout and language was designed to address the issues that Saudi participants were having. First, the icon images were replaced with pictures that better represented concepts to an Arabic audience, aiding their understanding and helping with their navigation. Second, the labels of the icons were translated and rewritten to more effectively convey their intended meaning. Third, the layout was designed vertically, using considerably less text and more visuals to help users with decision-making while navigating through the settings. Fourth, the language was fixed to be more appropriate for an Arabic audience, fixing the alignment and positioning of the text to the right to match the natural reading direction of users along with the correction of partial translation issues. Therefore, the overall proposed design guidelines summarise the findings and help this research solve issues raised by those in Saudi culture. The next chapter will discuss the evaluation and finalisation of the current research's design guidelines.

CHAPTER 6: DESIGN GUIDELINES EVALUATION

6.1 Introduction

The previous chapter explained the design guidelines and how each element was designed to solve the issues raised in the data-collection phase of this research. This chapter aims to evaluate the design guidelines that were developed. As mentioned previously, the Saudi participants involved in this study stated that Facebook design elements such as the layout and icon design were hard to understand and follow. It was also mentioned that the translated Arabic version of Facebook was often difficult to understand due to the presence of inaccurate translations and language inconsistencies. To meet the goals of the design format and content presentation of the design guidelines, a focus group was conducted to provide an objective evaluation. The following section will provide the evaluation of the icons, layout design and language based on the focus group discussions. Four interfaces (cases) were used to evaluate each element in the new design guidelines: two for cultural issues and two for language issues. Finally, a comprehensive interface was redesigned to consolidate the feedback regarding all factors.

6.2 Method

A focus group was conducted to evaluate the design guidelines. A discussion was provided for the following Facebook elements: the News feed, Icons, General settings, Settings pages, Banner, Typography, Timeline, and Date and Time. Each focus group was based on group discussions, in which each participant was provided with a paper template of the proposed design guidelines. The template contained a screenshot of the English Facebook above two Arabic versions with the current Arabic version on the left and the proposed design on the right. An additional section below the images outlined the changes that had been applied in the proposed design in bullet form, providing an overview of modifications for the convenience of participants (see Table 24). The participants had sufficient time (aprox.10 min) to review the design guidelines, obtain an overview of the discussion's purpose, and ask any questions before proceeding.

Facebook element	
Original version (English layout) (Screenshot image)	
Existing Arabic version (Screenshot image)	Proposed Arabic version (Proposed design)
Bullet point list of the changes proposed for the Arabic version.	

Table 24 Template used for the design guidelines and focus group

Participant information for the focus group

Nine Saudi participants (five males and four females) were selected to take part in the focus group. All of the participants had first-hand experience with using the Arabic version of Facebook for a minimum of 4 years. The focus group participants were limited to Saudi participants between the ages of 24 and 34 and chosen from those studying English as a second language at schools in Bournemouth (UK). This convenience sampling method was selected due to the time and financial constraints involved in travelling to Saudi Arabia. However, more than three months away spent from a native culture may dilute the original culture (Tracy-Ventura et al. 2016). For this reason, none of the participants had been in the UK for longer than one month. This ensured that the participants were unlikely to have adapted to UK culture, thereby ensuring they would provide responses similar to native Saudis who have never left Saudi Arabia. Conducting this focus group in the summer enabled access to participants who would be coming to the UK for a short period of time, as this is the most popular season for short language courses. Participant details are found in Table 25.

<i>Participant</i>	<i>Gender</i>	<i>Age</i>	<i>Occupation</i>	<i>Time living in the UK</i>	<i>Facebook experience (years)</i>
<i>User 1</i>	Male	24	Student	4 weeks	4
<i>User 2</i>	Male	32	Student	3 weeks	5
<i>User 3</i>	Male	27	Student	2 weeks	7
<i>User 4</i>	Male	29	Student	2 weeks	6
<i>User 5</i>	Male	25	Student	4 weeks	5
<i>User 6</i>	Female	30	Student	1 week	4
<i>User 7</i>	Female	24	Student	2 weeks	5
<i>User 8</i>	Female	27	Student	1 week	6
<i>User 9</i>	Female	28	Student	4 weeks	7

Table 25 Focus group participants

6.3 Evaluation of the Design guidelines

The previous chapter (chapter 5) explained the design guidelines and how each element was designed to solve the issues. The following will discuss the evaluation of the icons, layout design and language based on focus group discussions. There are four interfaces (cases) used to evaluate each element in the new design guidelines: two for cultural issues and two for language issues. Afterward, one comprehensive interface is redesigned with all of the feedback in mind.

Cultural Factors

Two main elements in the Facebook design have been changed to fit Saudi culture, and they are icon designs and layout design. The following subsections will discuss the elements of Facebook in details.

Fixing the Icons: Evaluation of the Icon Design

This section will discuss the two key elements of the icon design: images, which have been replaced with ones more suitable understanding to Saudi culture and icon labelling, which has been improved through the use of multiple words in the descriptions. Regarding the images, avatars are also used to clearly show users what will happen once a particular icon is selected.

Participants agreed that icons with avatars facilitated greater comprehension of the icon's functionality. This supports the assertion that designing an image tailored to a specific culture's understanding will help prevent navigation issues with Facebook. The proposed icons also facilitated more positive attitudes towards participants' interactions with the Arabic version of Facebook. This confirms the findings of Bedford (2014), who stated that improving users' usability requires icon designs that are easily recognised at a glance. In other words, once the icons are designed to reflect a culture, a user's experience and attitude towards the application will improve, leading to an increased intention to use. This demonstrates the value of chapter 5's developed design guidelines.

The participants in the focus group unanimously agreed that translating texts to accurately represent icons was highly relevant, and that it improved their understanding of the icon. The following section will provide a detailed illustration of the positive

responses from the participants concerning the proposed design and labelling of each icon.

General settings

The proposed icon helped users identify the purpose of the link. The labelling has been improved from ‘general settings’ to ‘your personal Facebook settings’. The modified label attempts to clarify the icon’s purpose to avoid misunderstandings that might otherwise arise. The participants stated the proposed icon and its label for personal data were much more informative and representative than the existing version. All of the participants agreed that the icon’s labelling was very clear and described the functionality of each link or icon. All the participants also agreed on the proposed labelling for the icon as illustrated by the following excerpts from the discussion:

*“The proposed icon **helps to identify** that this link relates to the personal settings”* User 1 (agreed with by Users 2, 3 and 4).

*“It is **better than the existing** icon because the old image wasn’t specific enough”* User 4.

“I like the proposed image because it represents personal identity in Saudi Arabia” User 7.

Privacy settings

The previous icon used a padlock to illustrate privacy. However, in Saudi culture, a key represents ‘privacy’, so the proposed icon integrates this imagery. The original consists of a padlock image with words ‘prevent from entering’ behind, and the labelling was also modified to ‘your privacy settings’. The participants agreed that the padlock image helped them identify this icon as representing the privacy settings, and that the labelling was clearer as illustrated by the following:

*“The proposed **image explains** the purpose of the icon well because it explains better”* User 3 (agreed with by Users 5, 7 and 9).

*“The proposed **icon is better** because the old one does not mean anything to us; placing just a lock screen is not specific enough”* User 1 (agreed with by Users 2, 4 and 8).

Block

The ‘block’ icon in the current design resembles a red ‘do not enter’ sign, which resembles road signs in Western countries but is too abstract for many Saudi users. Therefore, the proposed icon illustrates a group of avatars covered by black a ‘not

allowed' symbol and a translated label that states, 'block people from navigating your pages'. The participants agreed that the proposed icon clarified their understanding, better communicating that users could be blocked from entering the account. All of the participants also agreed that the labelling clearly denotes the intended meaning of the icon as indicated by following comments:

"Placing an avatar and a block symbol helps us identify that this icon is for blocking people" User 1 (agreed with by User 7).

"The proposed icon is much clearer and helps me to understand the purpose of the icon" User 4 (agreed with by Users 5 and 8).

"It is really better; however, many words are used. It seems too much in the beginning. But indeed, makes lots of sense." User 3

Notification

The translation of this option now shows three main words, 'your notification settings', with an avatar illustrating the term 'notification' in this context. Therefore, all of the participants agreed with the proposed labelling for this icon, and the image depicting notifications improved their understanding of its intended function. This was demonstrated through the following comments:

"I like the proposed icon, as it explains the purpose of the notification better and the page it represents" User 2 (agreed with by Users 4, 5, 6, 7 and 8).

"The existing icon does not help identify the purpose of the link, but the proposed icon explains it very well" User 1 (agreed with by Users 3 and 9).

Mobile

The image is used to reflect 'your mobile phone', because the hand represents possession in Arabic culture. The label was changed to 'your mobile settings', which the participants agreed was clearer. They also stated that the icon was clearer and better than the existing image.

"Placing a hand holding a phone explains it better, because it helps us identify that this icon relates to changing the setting of our personal phone" User 3 (agreed with by Users 4, 5 and 9).

"The proposed icon explains things better than the existing icon, because the existing icon does not say much because the phone is not clear" User 2 (agreed with by Users 5 and 8).

Followers

In Arabic culture, the word, 'queue', broadly denotes 'followers' or those who follow behind. For this reason, the image was changed to reflect being followed by others. The word, 'followers', has been changed to 'the people who follow you', indicating that it is not you who follows others, but others follow you. Upon evaluation, the participants agreed that the icon's proposed image and labelling were improvements. They added that the icon represents a group of avatars, similar to a 'LinkedIn' icon, which also helped them identify the icon's meaning. All of the participants agreed that the labelling was very clear.

*"I like the proposed **icon better** than the existing icon, because it is the same icon that is used in LinkedIn to represent 'followers'"* User 4 (agreed with by User 7 and 8).

*"The image of a **group of avatars helps to identify that this icon represents followers better** than the existing version, because the existing version does not represent anything to me"* User 3 (agreed with by Users 6, 9 and 7).

Application

The design of the applications icon was based on an array of icons with a hand design illustrating they could be clicked. The participants agreed that the new icon and its labelling was an improvement, arguing that the new version would intrinsically mean more to them, and that the use of the hand imagery suggested they could choose what needed modifying. The existing apps icon is also the same icon used for games, which confuses users from the start.

*"The proposed icon **helped me to identify that this icon represents applications** more to the existing icon. The existing icon does not represent anything, and so it is unclear what the purpose of the icon is"* User 3 (agreed with by Users 4 and 5).

*"**Placing a hand on top of the icon helps us identify that this icon means clicking on an application** that we choose to modify or activate"* User 6 (agreed with by User 9).

Advertisement

Traditionally, in Saudi culture, ads are listed on tables in streets. The proposed modified Facebook icon, therefore, represents an avatar posting an advertisement sign, a form of imagery easy for users to recognise and understand. This helped the participants understand that the icon represented an advertisement. The participants agreed that the labelling was very clear and easy to understand as indicated by the following:

*“The proposed icon is **much clearer**, as it tells the user that this icon is for posting advertisements. Therefore, placing **an avatar posting a sign of advertisement**, as we see in our everyday life, **better represents our understanding**”* User 4 (agreed with by Users 7 and 8).

*“The existing icon is very confusing as it has a logo of ‘f’ which does not mean anything and it is very hard to understand what it means. Therefore this icon is **much clearer and easier to understand**”* User 2 (agreed with by Users 3 and 9).

Games

Using a depiction of a computer-like avatar playing with a controller helped participants understand the icon’s meaning. The participants said this avatar reminded them of a PlayStation, and therefore represented the concept of gaming much better than the current icon. This opinion was represented by the following comments:

*“The proposed icon is a computer... and a PlayStation controller **says so much and helps us to identify** that this icon represent playing games online”* User 2 (agreed with by Users 3 and 6).

*“The proposed icon better represents our **understanding that this icon is for games**. The existing icon represents a game, which is not clear, and so it is confusing what the icon represents”* User 1 (agreed with by User 9).

Pictures

Participants agreed that the proposed design of an avatar holding a camera is very clear and easy to identify. This was augmented by labelling that states, ‘the pictures you uploaded’, which is clearer than the current label. This modified icon and text illustrate the meaning of the icon well, making it easier to identify.

*“Placing an image of an avatar taking pictures **helps us understand** the purpose of the icon, because this icon represents the pictures that are taken by us and suggests a place where we can post pictures that we upload ourselves”* User 3 (agreed with by Users 1, 4, 8 and 9).

Page feed

The participants agreed that the proposed labelling (‘create a page’) and the icon design of a ‘page’, with a hand pointing to the ‘create a page’ section were clear and more functional than the original orange flag as illustrated by the following comments:

*“Using an example of an existing page feed from Facebook is **way better than the existing version**, because the orange flag does not represent anything, so the icon does not mean anything to us”* User 4 (agreed with by Users 5, 6 and 7).

*“I like the proposed **image better**, because it clearly shows what the icon’s purpose is and makes it **less confusing** and resented than the old icon”* User 9 (agreed with by Users 1, 2 and 3).

Page likes

The participants unanimously agreed that the proposed label translation was an improvement. They stated that though the existing icon was functional, it did not properly or intuitively indicate the meaning of liking a comment or post. They were positive about the way in which the proposed design represented a page like and a representative ‘like’ (thumbs up).

*“Placing a **like button on top of an existing page helps us identify the page better**. The existing icon does not say much and confuses us”* User 5 (agreed with by Users 4 and 7).

*“The proposed icon is much better at **explaining and representing the purpose of the icon**. It better represents what the icon and page mean”* User 1 (agreed with by Users 2 and 9).

Icon Elements to consider when developing the design guidelines

After evaluating the design guidelines in regards to icon design, the focus group came up with the following solutions: replacing the images that are unfamiliar to Saudi culture with more suitable images, using a character (avatar) to inform the user about the likely outcome of his expected position after clicking on the icon, and using more than a single word to label the icons to reduce confusion from reading labels (see Figure 39). In the evaluation, the participants expressed feelings of comfort and clarity concerning the icons, and therefore, with regard to the ease in using the system.

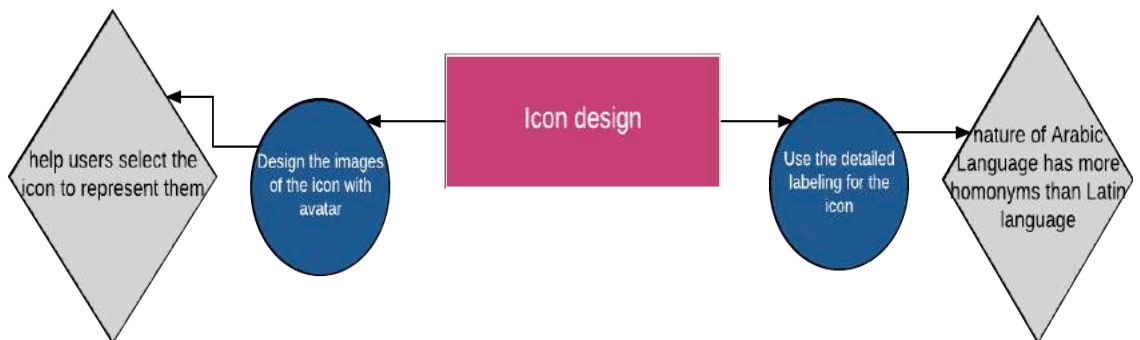


Figure 39 Icon guidelines

Fixing the Layout Design: Evaluation of the Design of the General and Privacy settings

Fixing the layout design entails a number of different changes to be made. First, each element was given a separate section to free space, which gives an impression of low page crowdedness. In addition, a representative image was added, the quantity of text was reduced, and the interface was simplified by means of buttons and dropdown features.

The new design is applied to the settings page, which was perceived to be the least used page in the responses to the questionnaire (see chapter 4). It was assumed that this would improve the participants' navigation process, as they had expressed a strong preference for the settings page to be designed in a vertical, rather than horizontal, style thereby reducing the amount of text and improving menu functionality. During the evaluation of the proposed update, the participants claimed that changing the orientation and adding more space between each menu option on the page served to clarify the settings and make the text easier to read:

*“Placing each menu in its separate space gave more **clarity to each setting**”* Users 5 and 9.

*“The menu labelling **reads better** and allows me to focus on each setting much more easily”* User 6 (agreed with by User 7).

*“Yes, placing the menus to be vertical allows **more space** on the page and gives more space to the images”* Users 3, 4, 6, 8 and 9.

Using an image to illustrate the settings clarified their functions in a visual way. However, participants also recommended including video tutorials on how to use the settings page, arguing that this would further improve the navigation experience.

*“Displaying an image to represent each setting helped me a lot, because I prefer looking at example images **to prevent confusion**”* User 4 (agreed with by Users 5 and 7).

*“I prefer the **image examples** to the text. They improved my navigation in the settings page”* User 1.

*“It would also be a good idea if there was an extra option to watch a **video** to demonstrate each setting for first time users”* User 5.

In the discussion, majority of participants decided that a ‘hover effect’ technique, in which the mouse rolled over an element to review the alternative text, helped them understand what the element was before they decided to click on it.

*“Using a hover over technique on a button **will help identify the settings better** before using them”* User 3 (agreed with by Users 5 and 7).

*“A hover over technique allows the text to pop up whenever we need it. This helps **reduce the amount of text** in the page”* User 9.

In the design guidelines, the separation of each menu and the reduction of the text proved to be an effective strategy to reduce ‘crowdedness’, an issue initially raised in chapter 4. Therefore, presenting each element separately gives each setting more space for images and buttons resulting in improved clarity.

*“Having the settings represented separately by placing **a border around them is better**, because the existing version is not very easy to read and confuses the navigation on the page”* User 2.

Therefore, the participants’ comments prove that changing the layout can be an effective solution for navigation issues and can help reduce associated confusion by making the section easier to read and more appealing.

*“It makes the settings **much more appealing to read** and helps with navigation”* User 2.

*“The sectioning is so much better. This allows me to read the settings **clearly**”* User 3 (agreed with by Users 4 and 8).

*“It helps break down the text for navigation and **solves the issues**”* User 6.

The participants also stated that structuring the context with an emphasis on minimising the text made them more confident about the idea of using the settings.

*“**I would use the settings more often** if the design of the settings page was like that”* User 4.

*“The proposed design **would help me navigate** and change the **settings easily**”* User 2 (agreed with by Users 3 and 6).

*“**It would motivate me** to change the privacy and security settings and allow me to interact with Facebook with greater **confidence**”* User 5 (agreed with by User 9).

<i>Design Element</i>	<i>Old design</i>	<i>New design</i>	<i>Feedback</i>
<i>Pictures</i>	<i>No images illustrating the settings function</i>	<i>Placed an image along with the text in each settings</i>	<i>Much clearer and easier to understand. Motivates me to change the settings</i>
<i>Layout design</i>	<i>No separation between each settings</i>	<i>Sectioned each setting separately by placing a border around each element</i>	<i>Allows more space. Solves the issues with navigation and confusion</i>
<i>Complexity</i>	<i>Complex information to explain the settings</i>	<i>Simplified the page by placing it in the drop down</i>	<i>Helps navigation and changing the settings. Reads better</i>
<i>Positioning</i>	<i>Menu designed Horizontally</i>	<i>Changed to a vertical menu</i>	<i>Improves the navigation process Gives more space on the page</i>
<i>Language</i>	<i>Too much text</i>	<i>Simplified, with precise meaning supplied for each element</i>	<i>Navigate with greater confidence Easy to read</i>

Table 26 Evaluation summary of the icon design

Layout elements to consider when developing the design guidelines

With respect to the layout, the proposed solutions intentionally utilised less text and more pictures or videos. These elements were carefully separated and supported by the vertical design of the menu in an attempt to give the perception of more available space. Overall, an attempt was made to simplify the pages by decreasing the visible content through using fewer options and with a greater emphasis on drop down menus (see Figure 40). The users evaluated the changes as being easier to follow and navigate than before. They also reported feeling less stressed about the idea of handling a smaller number of elements on the page.

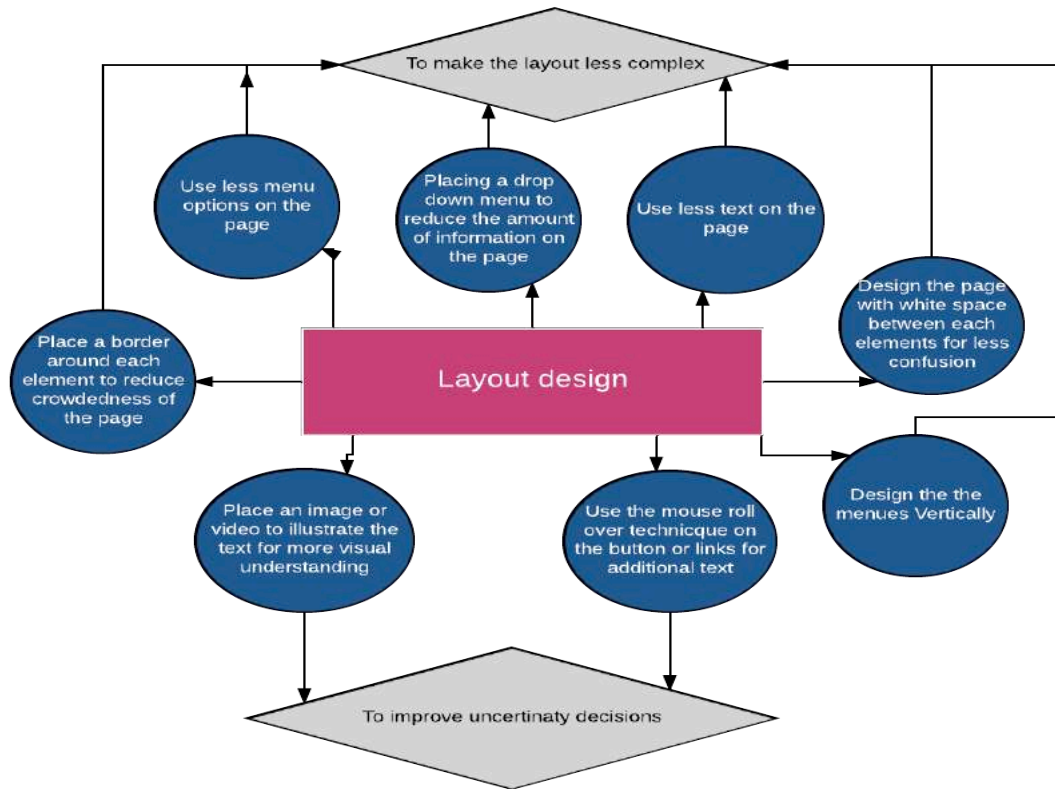


Figure 40 Layout guidelines

Translation and language problems

This section discusses the evaluation of the language problems raised by Saudi participants during the data collection phase discussed in chapter 4. With reference to their specific needs, the current Facebook design seems to have two main inaccurate language mistakes: the alignment of the text and the inaccurate translation with partial translation. The following sections will discuss these elements in more detail.

6.3.1.1 Fixing alignment: evaluation of the design of the layout of the home page

When the new design was proposed to the focus group, their responses and general attitude towards the changes were positive. The evaluation of the proposed news feed design solves issues related to their culture (namely Saudi Arabia) such as reading orientation and preferences in the layout, leading to an increase in easy use and satisfaction with the design.

*“It makes sense placing **the text on the right**, as it follows the Arabic reading orientation (right to left)”* User 1 (agreed with by Users 2 and 4).

*“It improves the overall look of the News Feed and **helps with the navigation**”* User 5.

*“It’s **much simpler** than the existing version”* User 3 (agreed with by Users 8 and 9).

The positioning of elements in the banner to suit the Arabic reading orientation from left to right improved the participants’ attitudes towards the ease of navigation and their level of engagement with the layout. The participants unanimously agreed that moving the text and menus to the right matched their reading orientation, improved their navigation and made it easier for them to find the menus in the banner.

*“I agree that the text should be written in front of the icons, because **it helps the reading orientation in Arabic (i.e. right to left).**”* User 3 (agreed with by Users 4, 5 and 9)

*“Positioning the navigation text and icons on the right side of the banner **reads much better**”* User 4 (agreed with by Users 3 and 6).

*“It **improves the overall look** of Facebook and helps with the navigation.”*

The participants also noted that the proposed design was translated correctly and that this change made reading easier, quicker and less confusing. The decision to reformat the numbers and dates, as well as to use simpler terms, was also received well. The reformatting seems to have solved the issues raised in chapter 5 by making the navigation clearer and the overall look consistent and easier to read (See Table 27).

*“Navigating is much **clearer** in the proposed version, because all of the text is translated into Arabic”* User 2 (agreed with by Users 5 and 7).

*“Positioning all the text and menus to the right improves the overall look of the page and makes it **consistent**”* User 9 (agreed with by Users 1, 2, 4 and 8).

*“The correct translation of the numbers and dates makes the whole sentence much **easier to read**”* User 3 (agreed with by Users 4, 5 and 9).

Design Element	Old Design	New design	Feedback
Positioning Orientation	Positioning of the banner menu is on the left	Positioned the banner menu to the right	Improves the navigation process and makes the page look more consistent
Language	Mix of languages (English and Arabic)	Translated all the text to Arabic	Reads better Less confusing
Numbers	The numbers are written in the wrong format and in English	Translated the numbers to Arabic and in the correct format	Easy to read

Table 27 Evaluation summary of the home page

6.3.1.2 Inaccurate translation: Date and time Format

The focus group discussion shows positive responses and demonstrates that the design guidelines solve the issues relating to translation and partial text in the news feed. In addition, the changes seem to have resolved the inaccurate translations found in the Arabic version, along with the presentation of the dates and time in a way consistent with the use of Arabic. The following quotes demonstrate that the participants felt happy with the design, deriving a new and improved understanding of the text from these changes. They agreed that the use of the Islamic calendar and the correct names and numbers would improve their understanding and solve the issues that they had identified with the translation of the Arabic version of Facebook.

*“Using **the Islamic calendar instead of the Gregorian calendar** makes it much better, because we all use it in our everyday life in Saudi Arabia”* User 8 (agreed with by User 9).

*“Yes, it is better to use the Islamic calendar, as it helps us to **understand the exact date** that people make comments on Facebook”* User 4.

*“Translating the **numbers and words** makes it easy to follow and understand”* User .

Evaluation of the translation found in the Privacy Settings

All of the elements on the privacy settings page have been considered and fixed. Data from the interviews and questionnaire show this page is not used at all, as it is perceived to be complicated and sophisticated. Consequently, users do not explore and or use any of the options provided. In the proposed design, as illustrated in the previous chapter, the sub-menu has been redesigned to remove any incidences of partial translation to help resolve the raised issues. During the evaluation, the participants indicated the proposed design of the translation in the sub-menu of the settings page was greatly improved, and therefore, it reduced their confusion.

*“Yes, the translation is much better, and it encourages me to customise my **privacy settings**”* User 3 (agreed with by Users 5, 6, and 7).

The discussion of the sub-menu was positive. The amendments to the translation and the decision to reduce the amount of text seemed to help the participants engage with the settings. Participants also agreed that improving the translation made the page easier to navigate and created less confusion. They also agreed that separating the settings into

sections and reducing the quantity of text while having a greater emphasis on visuals made the settings page more appealing and easier to navigate.

*“Too much Arabic text on the screen made me confused and prevented me from reading everything. It’s hard to read off the screen; therefore it is a good idea to **reduce the amount of text on screen**”* User 4 (agreed by Users 6 and 7).

*“A mixture of **text and images** on the page makes the navigation **more appealing**”* User 1 (agreed with by Users 3 and 4).

*“Yes, I agree it is **easier to navigate** if there is less text”* User 4 (agreed with by Users 5 and 9).

“I like the proposed design where each setting is separated into sections. It allows easier navigation and encourages us to use it” User 4 (agreed with by Users 5 and 6).

*“**Much simpler and clearer**, and this help with the navigation”* User 2 (agreed with by User 9).

Design Element	Old Design	New design	Feedback
Layout Design	Complexity with the amount of text	Text is reduced and more space is included around the Arabic words	Allows easier navigation and encourages us to use it Much simple and clearer
Complexity			
Positioning	Placement of all the elements together Mix of positioning of text (sometimes on the right and sometimes on the left)	Placing elements with a border for less confusion between elements Positioned the text all to the right	Easier to navigate Less confusing Easier to navigate
Orientation			
Language	Mix of languages in one sentence	Use more relevant text Fixed partial translation	Encouraging to use it A mixture of text and images on the page made the navigation more appealing

Table 28 Evaluation summary of the privacy settings page

Language elements to consider when developing the design guidelines

In regards to the Arabic translation of Facebook pages, the three solutions proposed in the design guidelines are: the alignment of all content to the right, including text, pictures and other content; providing numbers and calendars in a format that suits Saudi culture and norms (i.e. the use of Islamic calendars and Arabic or Hindi numbers); and fixing translation and grammar errors. The participants found that these linguistic solutions improve the usability of Facebook, and that they make it clearer and easier to use. In brief, the solutions proposed in the design guidelines improve the overall perception regarding easy use, usefulness, associated stress, and convenience, as well as making the page more engaging than the original form (See Figure 41).

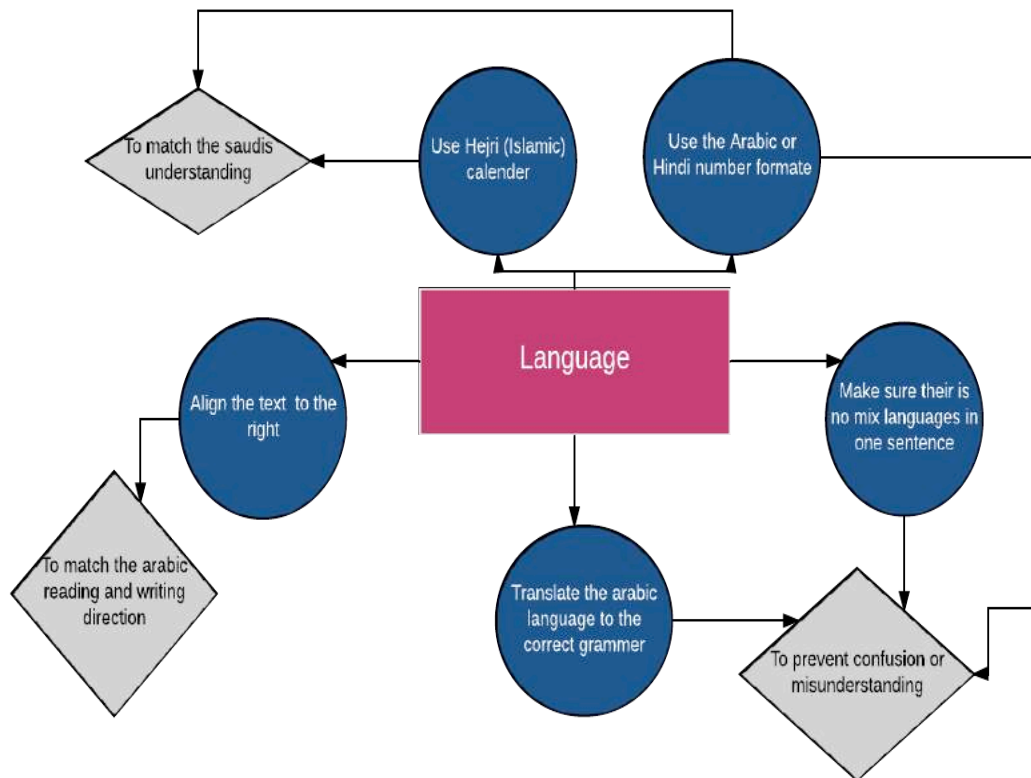


Figure 41 Language guidelines

6.4 Chapter Summary and Final Design guidelines

After formulating the proposed design guidelines, a focus group was conducted to evaluate the viability and effectiveness of the design. Each element was demonstrated to the participants with a comprehensive discussion on related issues, as well as the steps taken to resolve it. Participants were then asked whether they believed the design guidelines had solved the issue. Therefore, a final design guideline was developed with all of the changes and their evaluations included (see Figure 42).

The participants found it clearer and easier to identify the functionality of each icon, adding that the proposed icons were very helpful and made it easier to understand the purpose of the links (F16). They also agreed the labelling, through the inclusion of clear text to describe the intended functionality, was very helpful and improved their navigation (F17). In addition, the participants also expressed a strong preference for the menus on the settings page to be displayed vertically. They claimed that including a visual example with the text on the settings page would encourage them to change the settings and allow them to navigate through the menu effectively (F18). They also mentioned that incorporating a video to illustrate the operation of each setting (E2)

might help visually oriented users use the settings page. Suggestions were also made to incorporate an alternative icon tags (E1), as they preferred more clarity in improving the navigation experience to help users understand. Lastly, participants also stated that the positioning of the language in the design guidelines, with a reduced emphasis on text and a right orientation to match the direction of reading in Arabic, improved the overall navigation and look of the page. It was also agreed that using the correct format for numbers and dates and utilising simpler words improved the users' understanding and reduced their confusion because it made the interface more consistent and easy to read.

Regarding the translation of the Arabic language, the three solutions proposed through the design guidelines are: the alignment of all text, pictures and other content to the right, as well as using numbers and calendars in the correct format to suit Saudi culture (i.e. using Islamic calendars and Arabic or Hindi numbers). In addition, translation and Arabic grammar errors were fixed. The participants claimed these linguistic solutions improved the usability of Facebook and made the layout easier to use (F19). In brief, the proposed solutions in the design guidelines improve Facebook's ease and overall usefulness, as well as make the experience of using Facebook in Arabic less stressful, more convenient and more engaging than the traditional version. This final design solution could be useful when designing other social media platforms to suit Saudi culture.



Figure 42 Final Design guidelines

Recommendation

This study recommends the following in improving understanding when designers are from a different culture than the users.

- Since different cultures can have different design preferences, one of the design team members needs to understand the culture-related issues, train other team members regarding the cultural differences in design preferences, or do more research on the cultural design preferences for targeted countries where most/valuable users are expected to use it.
- Consider cultural model aspects such as understanding the nationality of the users using the Hofstede dimension. The language differences are important, as these cultural factors can help designers understand the relationship between culture and user preference in terms of the required presentation features or style. Indeed, using the Hofstede dimension to compare the differences between countries that score high and low in each dimension will help developers understand the difference between the design preferences suited to what the user is use to in their everyday life.
- It is also important for developers to consider the differences in thought and communication styles with regard to interface design. These factors depend on how people interact with user interfaces and how they process information and solve decisions. In addition, a user's understanding is dependent on their communication style.
- Understand users' behaviour regarding the issues, as it could lead to miscommunication or the discarding of important elements on the user interface design.
- When displaying images or icons as a main source for navigation, consider users' understanding of that icon, as it could lead users who have a high uncertainty avoidance to avoid using the elements due to their anxiety of getting lost in a user interface.
- Perceptions of complexity, overwhelming, or easiness to follow shall be studied carefully, because these perceptions are different based on users and not on the technology.

CHAPTER 7: CONCLUSION

7.1 Research summary

Culture has an impact on the preferences of users and their expectations of the elements found in the user interfaces of social media platforms, which has been demonstrated in the context of Facebook. In an attempt to comprehensively address the research question: *How does the misalignment between the original user interface of Facebook (development in the USA) and its Arabic version affect Saudi Arabian users perception, expectations, attitudes and behaviour?* Therefore, five objectives were considered. This study attempted to:

1. Review literature to gain a good understanding of the user needs and enhance the Arabic user interface design Facebook.
2. Develop tools to understand Saudi Arabian users' attitudes and behaviours towards Facebook.
3. Understand Saudi Arabian views on the current design of the Arabic version of Facebook.
4. Develop design guidelines to aid Facebook developers in incorporating culturally related issues into the Arabic version of Facebook.
5. Evaluate the design guidelines by using a focus group.

This research illustrates that the Facebook user interface has some contradictions with Saudi preferences, which exist because of their culture. Their attitudes and behaviours towards Facebook were negative due to inherent cultural beliefs and preferences, which led them to cite issues with the complexity of the page and the level of information available on certain pages. They also prefer icons to be clearly recognizable to help their navigation process. Additionally, this research found that the current design of the Facebook interface, which included inaccurate English to Arabic translations, inappropriate positioning of text and menus, as well as an incorrect calendar types, resulted in overall avoidance amongst some Saudi Arabians, even though the translated version is supposed to be more suitable for their use.

The findings show negative attitudes towards the elements of Facebook. This research illustrates that while some Saudis continue to utilise Facebook, and perhaps become accustomed to any errors in its user interface design, others avoid using it completely and move to other social media. However, it should be noted that the adoption of alternative programs could a result of peer pressure or other factors. To avoid future design problems, a new design guideline has been proposed in the current study. The

design guidelines include a set of rules to assist designers in better understanding various cultural and language issues. In this way, the design guidelines should help them design a user interface that better suits the needs and desires of Saudi Arabian users. The design guidelines include rules for user interface designers with respect to icons, layout and language related issues to suit Saudi Arabians.

7.2 Research contribution to knowledge

This research has contributed to knowledge, primarily through the provision of practical insights into the relationship between cultural aspects and user interface design.

1. This research is the first to develop a functional and conceptual understanding of the perception, attitudes and behaviour of Saudis toward key elements of the Facebook user interface, such as icons, layout and language. It demonstrates how preferences can change due to the experience of being in a country with a different culture. It also illustrates users' ability to adapt to unsuitable user interface elements due to frequent use. This research supports a better understanding of Saudi preferences for a user interface design.
 - a. The findings show that Saudi Arabians typically prefer simple interfaces that contain fewer options. Many Saudis perceive the layout of the Arabic version of Facebook to be too complex to be easily used. Based upon these outcomes and evaluations, the use of vertical menus, familiar pictures and images in icons, and drop down menus, as well as the inclusion of less text, are more desirable for Saudis.
 - b. This research shows that Saudi Arabians prefer detailed labelling and icons that explicitly represent functionality. This approach helps navigate through Facebook easily and without confusion.
 - c. This research demonstrates that the correct positioning and orientation of text in Facebook, in addition to the placement of key elements and the use of the appropriate calendar format, would help Saudi users navigate through the Arabic version of the user interface.

7.3 Research Limitation

This research has highlighted four different behaviours to consider in the potential misalignment between certain Facebook interface design elements and the users'

culture, in this case that of Saudi Arabians. These behaviours include Hofstede's dimension, the perceptions in understanding pictures and icons, and the cultural mentality with respect to dealing with information. However, this research was not able to measure these behaviours, as this is outside of the scope of this research. The aim of this research was the development of a viable design guideline to improve the usability of the Arabic version of Facebook rather than to change or adapt the behaviour of its users. Nevertheless, interesting further research could be conducted to investigate how the Facebook user interface can affect the user experience.

As noted above, certain aspects of Hofstede's dimension were employed in this research. Using his dimension was useful in guiding the design of a user interface to better accommodate the cultural preferences of target users. However, after analysing the results from this research, it was found that only uncertainty avoidance and power distance were relevant to the issues that were raised by the participants. As mentioned in the literature in section 2.4.1.2 cultures that score highly in power distance prefer linear navigation, fewer links, and less functionality information in a user interface. Likewise, those with high uncertainty avoidance prefer clear information and complex interfaces to reduce ambiguity. However, a more comprehensive application of these dimensions would be an interesting and potentially fruitful avenue for study, but this was also beyond the scope of the current research.

The research was unable to perform a comparative study between Saudis and non-Saudis. This means that an investigation into the impact of preferences in this area could be undertaken to broaden the understanding of the topic, especially for non-Saudis who are from the designers' homeland. Nevertheless, before this thesis, there has been no research regarding in Saudi Arabia or even in a broader Arabic context in regards to a translated version of user interface for social media.

7.4 Future Research

The following are some contextual limitations that may serve as productive starting points for future research regarding the same question addressed by the current study, but in different settings and at different points in time. Therefore, the following imply various ways in which valid further investigation may be conducted.

Other pages of Facebook

This research spotlighted the role that culture plays in understanding consumer preferences in the social media user interfaces. However, the scope of the current research was limited to focus on the main interface and the settings page. It may be useful and informative to extend this study to other pages and see whether the other pages have similar problems.

Cultural factors in designing social media mobile applications

This research focuses on Facebook pages that are displayed on computer screens. It may be interesting to replicate this research in the context of mobile platforms. Certain constraints exist when designing user interfaces for mobile devices and possibly tablets, as Saudi Arabian culture may approach interaction to mobile platforms differently, as Facebook applications are designed differently than the computers. This concept was out of scope for this research.

Cultural factors affecting the design process for different age groups

The current study focused on the views of users between the ages of 18-36 years, as the majority of users on Facebook belong to this age group. However, future research may be conducted into the responses of different age groups, such as children under 18 or over 50. These groups may have different navigation preferences, which might change their experiences when interacting with Facebook.

Other cultural factors in social media

This research is based on perceptual responses drawn from Saudi Arabian culture. Since this research found that the perceptions of participants tend to be influenced by two cultural dimensions (power distance and uncertainty avoidance), it may be beneficial to examine other cultural dimensions, such as the impact of national collectivism. Collectivism could have an impact of the usage behaviour. This research found that if a user's friends were using the Facebook, s/he would have a tendency to use it even if s/he is not satisfied with the icons, language and layout. Thus, it seems collectivism can play a role in adaptability and acceptance of the different design elements. However, this research has not covered this point in depth. It seems that each group of a friend network may have different design preferences based on their collective backgrounds, experience and culture.

Navigation behaviour

This study provides an insight into the impact that cultural determinants can have on the perception and behaviour of users. Therefore, fruitful future research could investigate how these culturally related navigation preferences can be met with tailored user interfaces for other forms of social media.

Comparative Study between Saudis living in Saudi Arabia and living in the USA

To better understand how the cultural differences between the country of origin and country of use affect design preferences, future research could examine the differences between groups of people who share the same language but who have been living in different countries for a protracted period of time. This may this may lead to insights regarding the differences in design preferences between the two groups that could inform more effective user interface designs. Given that theorising cultural design preferences and users' related attitudes and behaviours are relatively new topics, further research should be carried out in a range of contexts to create a clear and systematic theory that can be used by designers worldwide.

References

- Abram, C., 2016. Facebook for dummies. John Wiley & Sons.
- Abras, C., Maloney-Krichmar, D., & Preece, J. (2004). User-Centered Design. In W. Bainbridge (Ed.), *Encyclopedia Human-Computer Interaction*. Thousand Oaks, CA, USA: Sage Publications. Retrieved April 21st, 2016 from: <http://www.e-learning.co.il/home/pdf/4.pdf>
- Abras, C., Maloney-Krichmar, D., & Preece, J. (2004). User-Centered Design. In W. Bainbridge (Ed.),
- Abu- Rabia, S. and Taha, H 2006. Phonological errors predominate in Arabic spelling across grades 1-9. *Journal of psycholinguistic Research*, 35(2), 167-188.
- Ajzen, I., 1985. From intentions to actions: a theory of planned behaviour. In: Kuhl, Julius, Beckmann, Jeurgem (Eds.), *Action Control: From Cognition to Behaviour*. Springer, New York.
- Ajzen, I., 1985. From intentions to actions: a theory of planned behaviour. In: Kuhl, Julius, Beckmann, Jeurgem (Eds.), *Action Control: From Cognition to Behaviour*. Springer, New York
- Ajzen, I., 1987. Attitudes, traits, and actions: dispositional prediction of behaviour in personality and social psychology. *Adv. Exp. Soc. Psychol.* 20 (1), 1–63.
- Ajzen, I., Fishbein, M., 1980. *Understanding Attitudes and Predicting Social Behaviour*. Prentice-Hall, Englewood Cliffs, NJ
- Ajzen, I., Madden, T.J., 1986. Prediction of goal-directed behaviour: attitudes, intentions, and perceived behavioural control. *J. Exp. Soc. Psychol.* 22 (5), 453– 474.
- AlGahtani, S., Hobana, G., & Wang, J. (2007). Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information & Management*, 44(8), 681–691. <http://dx.doi.org/10.1016/j.im.2007.09.002>
- Alsaif, M., 2014. Factors Affecting Citizens ' Adoption of e- Government Moderated by Socio and Cultural Values in Saudi Arabia.
- Alshamari, M., 2015. Documentation of Discourse-related Particles in North Hail Arabic. *English Linguistics Research*, 4(4), p.p44.
- Alsumait, A., Al-Osaimi, A. And Alfedaghi, H., 2009, July. Arab children's reading

preference for different online fonts. In International Conference on Human-Computer Interaction pp. 3-11. Springer Berlin Heidelberg.

Arabian Gazette, 2015. "'Social Media In The Arab World' 2015 -Report". Reterived in 30 November. 2016.

Auerswald, E.H. 1985. Thinking about thinking in family therapy. *Family Process*, 24, 1-12.

Akram, M.S. and Albalawi, W., 2016. Youths' Social Media Adoption: Theoretical Model and Empirical Evidence. *International Journal of Business and Management*, 11(2), p.22.

Augustine , B. 2016. GCC loan growth projected to decline to 6% in 2016. [online] GulfNews. Available at: <http://gulfnews.com/business/economy/gcc-loan-growth-projected-to-decline-to-6-in-2016-1.1899583> [Accessed 30 October. 2016].

Aykin, N. Ed., 2016. Usability and internationalization of information technology. CRC Press.

Bagozzi, R.P., 1992. The self-regulation of attitudes, intentions, and behaviour. *Social Psychol. Q.* 55 (2), 178–204.

Bagozzi, R.P., 2007. The legacy of the technology acceptance model and a proposal for a paradigm Shift. *J. Assoc. Inf. Syst.* 8 (4), 243–255. Bagozzi, R.P., Edwards, E.A., 1998. Goal setting and goal pursuit in the regulation of body weight. *Psychol. Health* 13 (4), 593–621.

Bagozzi, R.P., Warshaw, P.R., 1990. Trying to consume. *J. Consum. Res.* 17 (2), 127–140.

Bagozzi, R.P., Yi, Y., Phillips, L.W., 1991. Assessing construct validity in organizational research. *Adm. Sci. Q.* 36 (3), 421–458. Bagozzi, R.P., Baumgartner, H., Yi, Y., 1992. State vs. action orientation and the theory of reasoned action. *J. Consum. Res.* 18 (4), 505–518. Bagozzi, R.P., Bergami, M., Leone, L., 2003. Hierarchical representation of motives in goal-setting. *J. Appl. Psychol.* 88 (5), 915–943.

Bagozzi, R.P., Warshaw, P.R., 1990. Trying to consume. *J. Consum. Res.* 17 (2), 127–140.

Balakrishnan, B., Sundar, S.S. 2011: Where am I? How can I get there? Impact of navigability and narrative transportation on spatial presence. *Hum. Comput Interact.* 26(3), 161–204

- Bandura, A., 1986. *Social Foundations of Thought and Action, a Social Cognitive Theory*. Prentice Hall, Upper Saddle River, NJ
- Bandura, A., 1986. *Social Foundations of Thought and Action, a Social Cognitive Theory*. Prentice Hall, Upper Saddle River, NJ.
- Banks, J.A., 2015. *Cultural diversity and education*. Routledge.
- Barber, W. And Bardre, A. 1998. *Proceedings of the Conference on Human Factors and Usability*. Available from:
http://zing.ncsl.nist.gov/hfweb/att4/proceedings/barber_03108/2006 [Accessed September 15 2014]
- Bargas-Avila, J.A. and Bruehlmann, F., 2016. Measuring user rated language quality: Development and validation of the user interface Language Quality Survey LQS. *International Journal of Human-Computer Studies*, 86, pp.1-10.
- Battini, D., Faccio, M., Persona, A., & Sgarbossa, F. (2011). New methodological framework to improve productivity and ergonomics in assembly system design. *International Journal of Industrial Ergonomics*, 41(1), 30-42. DOI: 10.1016/j.ergon.2010.12.001
- Battini, D., Faccio, M., Persona, A., & Sgarbossa, F. (2011). New methodological framework to improve productivity and ergonomics in assembly system design. *International Journal of Industrial Ergonomics*, 41(1), 30-42. DOI: 10.1016/j.ergon.2010.12.001
- Baxter, L.A. and Norwood, K.M., 2015. *Relational dialectics theory*. John Wiley & Sons, Inc..
- Béguin, P., 2003. Design as a mutual learning process between users and designers. *Interacting with computers*, 15(5), pp.709-730.
- Benaida, M., 2014. *Developing arabic usability guidelines for e-learning websites in higher education* Doctoral dissertation, University of Salford.
- Bernard, M., 2002. *Criteria for optimal Web design designing for usability*.
<http://www.thinkinginweb.com/podcasts/09/criteriaforoptimalwebdesign.pdf>
 Berntsen, [Accessed March 16, 2014]
- Berntzen, L., 2004, August. Content analysis of a local government initiated discussion forum. In *International Conference on Electronic Government* (pp. 300-307). Springer Berlin Heidelberg.
- Blackmon, M.H., Kitajima, M. and Polson, P.G., 2005, April. Tool for accurately predicting website navigation problems, non-problems, problem severity, and

- effectiveness of repairs. In Proceedings of the SIGCHI conference on Human factors in computing systems (pp. 31-40). ACM.
- Bottesi, G., Ghisi, M., Carraro, E., Barclay, N., Payne, R. and Freeston, M.H., 2016. Revising the Intolerance of Uncertainty Model of Generalized Anxiety Disorder: Evidence from UK and Italian Undergraduate Samples. *Frontiers in Psychology*, 7.
- Brian, M., 2011. Arabic to overtake English as Facebook's biggest Middle East language. Online The Next Web. Available from: <http://thenextweb.com/facebook/2011/07/08/arabic-set-to-overtake-english-as-facebooks-biggest-middle-east-language/> [Accessed 5 Nov. 2015]
- Broadbent, S., 2016. *Intimacy at work: How digital media bring private life to the workplace*. Routledge.
- Brooks, L.L., 2014. Letters to an Absent Friend: A Generative Rhetorical Analysis of Facebook Memorial Pages.
- Brown, D., Totterdell, P., and Norman, M, Ed 2016. Adaptive user interfaces. Elsevier
- Bryman, A., 2008. The end of the paradigm wars. The Sage handbook of social research methods, pp.13-25.
- Burgmann, I., Kitchen, P. J., and Williams, R. 2006. Does culture matter on the Web? *Marketing Intelligence and Planning*, 24, 62-66
- Cañas-Bajo, J., Perälä, P.M., Silvennoinen, J.M. and Saariluoma, P., 2015, September. Affective contents of cross-cultural audiovisual experience. In Proceedings of the 19th International Academic Mindtrek Conference (pp. 82-88). ACM.
- Carson, D., Gilmore, A., Perry, C. and Gronhaug, K., 2001. Qualitative marketing research. Sage.
- Casaló, L.V., Flavián, C. and Guinalú, M., 2010. Antecedents and consequences of consumer participation in on-line communities: The case of the travel sector. *International Journal of Electronic Commerce*, 15(2), pp.137-167.
- Chai, C., Bao, D., Sun, L. and Cao, Y., 2015. The relative effects of different dimensions of traditional cultural elements on customer product satisfaction. *International Journal of Industrial Ergonomics*, 48, pp.77-88.
- Chan, T., and Bergen, B. 2005. "Writing Direction Influences Spatial Cognition," in Proceedings of the 27th Annual Conference of the Cognitive Science Society, Hillsdale, NJ: Lawrence Erlbaum Associates.

- Chi, C.F. and Dewi, R.S., 2014. Matching performance of vehicle icons in graphical and textual formats. *Applied ergonomics*, 45(4), pp.904-916.
- Chinthakayala, K.C., Zhao, C., Kong, J. and Zhang, K., 2014. A comparative study of three social networking websites. *World Wide Web*, 17(6), pp.1233-1259.
- Cho, V., Cheng, T.E. and Lai, W.J., 2009. The role of perceived user-interface design in continued usage intention of self-paced e-learning tools. *Computers & Education*, 53(2), pp.216-227.
- Cho, V., Cheng, T.E. and Lai, W.J., 2009. The role of perceived user-interface design in continued usage intention of self-paced e-learning tools. *Computers & Education*, 53(2), pp.216-227.
- Choi, J. Bakken, S., 2010. Web-based education for low-literate parents in Neonatal Intensive Care Unit: development of a website and heuristic evaluation and usability testing *Int. J. Med. Inf.*, 79 (8) pp. 565–575
- Coombs, W.T. and Holladay, S.J., 2015. Two-Minute Drill: Video Games and Social Media to Advance CSR. In *Corporate Social Responsibility in the Digital Age* (pp. 127-142). Emerald Group Publishing Limited.
- Costa, N. A. (2016). *Human Centred Design for Maritime Safety: A User Perspective on the Benefits and Success Factors of User Participation in the Design of Ships and Ship Systems*. Gothenburg, Sweden: Chalmers University of Technology. ISSN: 1652-9189 (Technical Report No. 16:162).
- Costa, N. A. (2016). *Human Centred Design for Maritime Safety: A User Perspective on the Benefits and Success Factors of User Participation in the Design of Ships and Ship Systems*. Gothenburg, Sweden: Chalmers University of Technology. ISSN: 1652-9189 (Technical Report No. 16:162).
- Costabile, M.F. (2001) 'Usability in the software life cycle', *Handbook of software engineering and knowledge engineering*,(1), pp. 179-192.
- Crawford, I.M., 1997. *Marketing research and information systems* (No. 4). Food & Agriculture Org..
- Cross, N. (2007). Design Cognition: Results from Protocol and and other Empirical Studies of Design Activity. In C. M. Eastman, W. M. McCracken & W. C. Newstetter (Eds.), *Design Knowing and Learning: Cognition in Design Education* (pp. 79-103).
- Cross, N. (2007). Design Cognition: Results from Protocol and and other Empirical Studies of Design Activity. In C. M. Eastman, W. M. McCracken & W. C. Newstetter (Eds.), *Design Knowing and Learning: Cognition in Design Education* (pp. 79-103).

Education (pp. 79-103).

Crowne, K.A., 2013. Cultural exposure, emotional intelligence, and cultural intelligence An exploratory study. *International Journal of Cross Cultural Management*, 13(1), pp.5-22.

Crumlish, C. and Malone, E., 2009. *Designing social interfaces: Principles, patterns, and practices for improving the user experience*. " O'Reilly Media, Inc."

Curran, K., Graham, S. and Temple, C., 2011. Advertising on Facebook. *International Journal of E-business development*, 1(1), pp.26-33.

Cyr, D., and Trevor-Smith, H., 2004. Localization of web design: An empirical comparison of German, Japanese, and United States web site characteristics. *Journal of the American Society for Information Science and Technology*, 55(13), 1199-1206.

Daghfous, A. and Ahmad, N., 2015. User development through proactive knowledge transfer. *Industrial Management & Data Systems*, 115(1), pp.158-181.

Dang, N.T. and Mestre, D., 2011, July. Effects of menu orientation on pointing behavior in virtual environments. In *International Conference on Virtual and Mixed Reality* (pp. 144-153). Springer Berlin Heidelberg.

Daouk, M. and Leveson, N.G. (2001) 'An approach to human-centered design', Workshop Human Error and System Development, Linkoping, Sweden.

Darejeh, A. and Singh, D., 2013. A review on user interface design principles to increase software usability for users with less computer literacy. *Journal of Computer Science*, 9(11), p.1443.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R., 1989. User acceptance of computer technology: a comparison of two theoretical models. *Management science*, 35(8), pp.982-1003.

Del Galdo, E., 1996. Culture and Design. In E. Del Galdo and I. Nielsen Eds.. *International User Interfaces*. John Wiley and Sons, Inc. 74-87

Doole, I. Lowe, R., 2008. *International Marketing Strategy: Analysis, Development and Implementation*

Downie, R., 2016. "What Facebook Owns That Other Social Media Do Not FB". Found in <http://www.investopedia.com/articles/insights/062816/what-facebook-owns-other-social-media-do-not-fb.asp> [Accessed September 12 2016]

- Dowty, D.R., 2012. Word meaning and Montague grammar: The semantics of verbs and times in generative semantics and in Montague's PTQ (Vol. 7). Springer Science & Business Media.
- Dudovskiy, J. 2011. Research Methodology. Positivism- Research methodology. [Online]. Available at: <http://research-methodology.net/research-philosophy/positivism/> [Accessed 31, November 2016]
- Duran, M., Irfan, S., Sipoche, D., Blough, D., Turner, D., Nguyen, P. and Steinberg, H., 2016, January. customer service & hofstede's cultural dimensions among arabs, australians, canadians, greek, jamaicans, pakistani, singaporean, & american accounting information personnel. In Allied Academies International Conference. Academy of Accounting and Financial Studies. Proceedings (Vol. 21, No. 1, p. 6). Jordan Whitney Enterprises, Inc.
- Eccher, C., 2011. Professional web design: techniques and templates. Cengage Learning.
- El Mourad, H. 2016. This is why arabs are leaving facebook and twitter in droves. [online]. Available at: <http://www.incarabia.com/technology/this-is-why-arabs-are-leaving-facebook-twitter-in-droves/> [accessed on June 2016]
- Encyclopedia Human-Computer Interaction. Thousand Oaks, CA, USA: Sage Publications. Retrieved April 21st, 2016 from: <http://www.e-learning.co.il/home/pdf/4.pdf>
- Endsley, M.R., 2016. Designing for situation awareness: An approach to user-centered design. CRC press.
- Euromonitor International., 2011. Saudi Arabia: Country Pulse [online]. Available from: <http://www.portal.euromonitor.com.ezproxy.liv.ac.uk/Portal/Pages/Search/SearchResultsList.aspx> (Accessed: 28 April 2012).
- Evers, V. And Day, D., 1997. The Role of Culture in Interface Acceptance. In S. H. Howard, Human Computer Interaction. London: Chapman and Hall
- Evers, V., 1998. Cultural Differences in Understanding Human Computer Interfaces.
- Facebook Newsroom, Facebook history [online] <http://newsroom.fb.com/company-info/> [Accessed on May 03,2016]
- Facebook Developers. 2015. Developers page [online] available at: <https://developers.facebook.com/> [Accessed June 2015]
- Facebook: Global Daily Active Users 2016 | Statistic". Statista. N.p., 2016. Web. 14

Sept. 2016.

- Facebook. 2017. Omnicoreagency.com. Facebook by the number: stats, Demographics and fun facts. [online] available at: <https://www.omnicoreagency.com/facebook-statistics/> [Accessed 3 Februarys 2017]
- Feick, L.F., Price, L.L., 1987. The market maven: a diffuser of marketplace information. *J. Marketing* 51 (1), 83–97.
- Ferré, X., Juristo, N., Windl, H. and Constantine, L. (2001) 'Usability basics for software developers', *IEEE Software*, 18(1), pp. 22-29.
- Festinger, L., 1957. *A Theory of Cognitive Dissonance*. Stanford University Press, Stanford, CA.
- Finnerty, A., Kucherbaev, P., Tranquillini, S. and Convertino, G., 2013. Keep it simple: Reward and task design in crowdsourcing. In *Proceedings of the Biannual Conference of the Italian Chapter of SIGCHI* (p. 14). ACM.
- Fiske, S.T. and Taylor, S.E., 2013. *Social cognition: From brains to culture*. Sage.
- Ford, G. And Kotzé, P., 2005. Designing usable interfaces with cultural dimensions. In *IFIP Conference on Human-Computer Interaction* pp. 713-726. Springer Berlin Heidelberg.
- Forsythe, A., 2009, July. Visual Complexity: Is That All There Is?. In *International Conference on Engineering Psychology and Cognitive Ergonomics* (pp. 158-166). Springer Berlin Heidelberg.
- Frauenberger, C. Disability and Technology - A Critical Realist Perspective. *Proceedings of SIGACCESS'15*. New York: ACM.
- Frauenberger, C. Disability and Technology - A Critical Realist Perspective. *Proceedings of SIGACCESS'15*. New York: ACM.
- Furlong, P. and Marsh, D., 2010. A skin not a sweater: Ontology and epistemology in political science. *Theory and methods in political science*, pp.184-211.
- Galitz, W.O., 2007. *The Essential Guide to An Introduction to GUI Design Principles and Techniques*,
- Gallud, J. And Tesoriero, R., 2011. Distributed user interfaces.. *Proceedings of the..*, p.2429-2432. Available from: <http://dl.acm.org/citation.cfm?id=1979576>. [Accessed February 12, 2015]

- Gerson, J., Plagnol, A.C. and Corr, P.J., 2016. Subjective well-being and social media use: Do personality traits moderate the impact of social comparison on Facebook?. *Computers in Human Behavior*, 63, pp.813-822.
- Gibbs, W.J. and Bernas, R.S., 2015. *Research Methods, Data, and Analytics: Examining Service Design and User*. *Contemporary Research Methods and Data Analytics in the News Industry*, p.32.
- Gitlin, L.N., (1995). Why older people accept or reject assistive technology. *Generations* 19(1). 41-46.
- Gitlin, L.N., (1995). Why older people accept or reject assistive technology. *Generations* 19(1). 41-46.
- Gonzalez-Lafaysse, L. and Lapassouse-Madrid, C., 2016. Facebook and sustainable development: a case study of a French supermarket chain. *International Journal of Retail & Distribution Management*, 44(5), pp.560-582.
- Graham, S. and Curran, C.T.K., 2011. *Advertising on Facebook*.
- Grieve, R., Indian, M., Witteveen, K., Tolan, G.A. and Marrington, J., 2013. Face-to-face or Facebook: Can social connectedness be derived online?. *Computers in Human Behavior*, 293, pp.604-609.
- Hall, E. And Hall, M., 1990. *Understanding cultural differences*. Yarmouth, MA: Intercultural Press
- Hall, E.T., 1959. *The silent language* Vol. 3, p. 1959. New York: Doubleday.
- Han, S. and Northoff, G., 2008. Culture-sensitive neural substrates of human cognition: A transcultural neuroimaging approach. *Nature Reviews Neuroscience*, 9(8), pp.646-654.
- Hannah, P., 2015. Reasons why traveling abroad is important for young people. <https://greenhearttravel.org/inspiration-for-travel/6-reasons-why-traveling-abroad-is-important-for-young-people> [Accessed on august 10, 2016]
- Harley, A. 2014 *Icon Usability*. Nngroup.com [online]. Available at <https://www.nngroup.com/articles/icon-usability/> [Accessed on June 2015]
- Helmrich, B. 2016 'Social Media for Business: 2016 Marketer's Guide: <http://www.businessnewsdaily.com/7832-social-media-for-business.html> [Accessed September 16, 2016]
- Hendrick, H. W. (2008). Applying ergonomics to systems: Some documented "lessons learned". *Applied Ergonomics*, 39(4), 418-426. DOI:

10.1016/j.apergo.2008.02.006

Hendrick, H. W. (2008). Applying ergonomics to systems: Some documented “lessons learned”. *Applied Ergonomics*, 39(4), 418-426. DOI: 10.1016/j.apergo.2008.02.006

Hermeking, M. 2006. Culture and Internet Consumption: Contributions from Cross-Cultural Marketing and Advertising Research. *Journal of Computer-Mediated Communication*, 11, 192–216.

Hoehle, H., Zhang, X. And Venkatesh, V., 2015. An espoused cultural perspective to understand continued intention to use mobile applications: a four-country study of mobile social media application usability. *European Journal of Information Systems*, 243, pp.337-359.

Hofstede, G. 1980. Motivation, Leadership, and Organization: Do American Theories Apply Abroad? Article. *Organizational Dynamics*, 91, 42-63.

Hofstede, G., 2001. *Culture's consequences: Comparing values, behaviors, institutions and organisations across nations* 2nd Ed.. California, USA: Sage.

Hofstede, G., 2003. *Culture's Consequences: Comparing Values, Behaviours and Organisations across nations*. Sage Publications.

Hofstede, G., 2010. *Cultures and Organizations: Software of the Mind, Third Edition: Intercultural Cooperation and Its Importance for Survival*, mcgraw-Hill Professional.

Hofstede, G., 2012. Geert Hofstede. *Intercultural Management and Organisational Culture: National Culture*. Itim International

Hogg, M.A., Cooper-Shaw, L., Holzworth, D.W., 1993. Group prototypicality and depersonalized attraction in small interactive groups. *Pers. Soc. Psychol. Bull.* 19 (4), 452–465.

Hollnagel, E. (2014). Human factors/ergonomics as a systems discipline? “The human use of human beings” revisited. *Applied Ergonomics*, 45(1), 40-44. DOI: 10.1016/j.apergo.2013.03.024

Hollnagel, E. (2014). Human factors/ergonomics as a systems discipline? “The human use of human beings” revisited. *Applied Ergonomics*, 45(1), 40-44. DOI: 10.1016/j.apergo.2013.03.024

Hossain, L. and de Silva, A. 2009, “Exploring user acceptance of technology using social networks”, *The Journal of High Technology Management Research*,

- Hsu, C.L. and Lin, J.C.C., 2008. Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. *Information & management*, 45(1), pp.65-74.
- Hsu, S. H., Chuang, M. C., & Chang, C. C. (2000). A semantic differential study of designers' and users' product form perception. *International Journal of Industrial Ergonomics*, 25(4), 375-391. DOI: 10.1016/S0169-8141(99)00026-8
- Hsu, S. H., Chuang, M. C., & Chang, C. C. (2000). A semantic differential study of designers' and users' product form perception. *International Journal of Industrial Ergonomics*, 25(4), 375-391. DOI: 10.1016/S0169-8141(99)00026-8
- Huang, K.C., 2008. Effects of computer icons and figure/background area ratios and color combinations on visual search performance on an LCD monitor. *Displays*, 29(3), pp.237-242.
- Hubbard, B. 2015 'Young Saudis, Bound By Conservative Strictures, Find Freedom On Their Phones'. *Nytimes.com*. [Accessed on July 15, 2016)
- Isherwood, S.J., McDougall, S.J. and Curry, M.B., 2007. Icon identification in context: The changing role of icon characteristics with user experience. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 49(3), pp.465-476.
- Ishida, R., 2007. Text size in translation. *W3C Internationalization. N. p, 3*.
- Islam, M.N. and Bouwman, H., 2016. Towards user-intuitive web interface sign design and evaluation: A semiotic design guidelines. *International Journal of Human-Computer Studies*, 86, pp.121-137.
- Jaeshik, S., 2016. Mapping One World: Religion and Science from an East Asian Perspective. *Zygon®*, 511, pp.204-224.
- Janghorban, R., Roudsari, R. L., & Taghipour, A. 2014. Skype interviewing: The new generation of online synchronous interview in qualitative research. *International Journal of Qualitative Studies on Health and Well-Being*, 9/0. DOI: 10.3402/qhw.v9.24152[doi:10.3402/qhw.v9.24152]
- Jankowski, J., Kazienko, P., Wątróbski, J., Lewandowska, A., Ziemia, P. and Ziolo, M., 2016. Fuzzy multi-objective modeling of effectiveness and user experience in online advertising. *Expert Systems with Applications*, 65, pp.315-331.
- Johnston, N., Partridge, H. and Hughes, H., 2014. Understanding the information literacy experiences of EFL (English as a Foreign Language)

students. *Reference Services Review*, 42(4), pp.552-568.

- Jolliff, M.E.R., Horodezky, S.J., Chung, T., Kerger, K., Brown, G.J., Johnsgard, T.J., Huang, J.J.H., Jalota, A., Yamakawa, D., Yee, J.N. and Leazenby, S.A., 2008. Method and system for automatically updating avatar to indicate user's status. U.S. Patent Application 12/127,349.
- Junco, R., 2012. The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers & Education*, 58(1), pp.162-171.
- Kaboub, F., 2008. Positivist paradigm. Leong, *Encyclopedia of Counselling*, Thousand Oaks, pp.786-787.
- Kalbach, J., 2007. *Designing Web navigation: Optimizing the user experience*. "O'Reilly Media, Inc."
- Kaplan, A.M. and Haenlein, M., 2010. Users of the world, unite! The challenges and opportunities of Social Media. *Business horizons*, 53(1), pp.59-68.
- Kaptelinin, V., 1996. Activity theory: Implications for human-computer interaction. *Context and consciousness: Activity theory and human-computer interaction*, (1), pp.103-116.
- Karpoff, E., 2013. *Considereing culture aspects in user interface design A Case Study of the Effects of Culture on User Experience When Localizing a Product from Europe to Japan*, August.
- Kashim, I.B., Adelabu, O.S. and Ogunwole, S.O., 2015, August. *Exploring Cultural Symbols in Nigeria for Contemporary Applications in Web Visual Design*. In *International Conference on Human Interface and the Management of Information* (pp. 215-225). Springer International Publishing.
- Kastanakis, M.N. and Voyer, B.G., 2014. The effect of culture on perception and cognition: A conceptual design guidelines. *Journal of Business Research*, 67(4), pp.425-433.
- Katan, D., 2014. *Translating cultures: An introduction for translators, interpreters and mediators*. Routledge.
- Katuk, N., Chun, K.L., Zakaria, N.H., Tahir, H.M. and Halim, M.S., 2015. Authenticate Yourself Once Using OpenID. *Journal of Information Assurance & Security*, 10(3).
- Keates, S., & Clarkson, J. (2003). *Countering design exclusion e An introduction to*

inclusive design. London: Springer-Verlag.

- Kelman, H.C., 1974. Attitudes are alive and well and gainfully employed in the sphere of action. *Am. Psychol.* 29 (5), 310–324.
- Khaddam, I. and Vanderdonckt, J., 2014. Towards a Culture-Adaptable User-Interface Architecture. *Romanian Journal of Human-Computer Interaction*, 7(2), p.161.
- Khan, H.U. and Alhousseini, A., 2015, July. Optimized web design in the Saudi culture. In *Science and Information Conference SAI*, 2015 pp. 906-915. IEEE.
- Khan, T., Williams, M.A. and Pitts, M., 2016. Cross-cultural differences in automotive HMI design: a comparative study between UK and Indian users' design preferences. *Journal of Usability Studies*, 11(2), pp.45-65.
- Khanom, S., 2014. "On Enriching Requirements Engineering Work Using Icons," PhD Thesis, Faculty of Information Technology, University of Jyväskylä.
- Khanum, M. A., Fatima, S., and Chaurasia, M. A. 2012. Arabic Interface Analysis Based on Cultural Markers.
- Kietzmann, J.H., Hermkens, K., McCarthy, I.P. and Silvestre, B.S., 2011. Social media? Get serious! Understanding the functional building blocks of social media. *Business horizons*, 54(3), pp.241-251.
- Kietzmann, J.H., Hermkens, K., McCarthy, I.P. and Silvestre, B.S., 2011. Social media? Get serious! Understanding the functional building blocks of social media. *Business horizons*, 54(3), pp.241-251.
- Kim, D.H. and Lee, H., 2016. Effects of user experience on user resistance to change to the voice user interface of an in-vehicle infotainment system: Implications for platform and standards competition. *International Journal of Information Management*, 36(4), pp.653-667.
- King, W.R. and He, J., 2006. A meta-analysis of the technology acceptance model. *Information & management*, 43(6), pp.740-755.
- Kobayashi, M. and Igarashi, T., 2003, November. Considering the direction of cursor movement for efficient traversal of cascading menus. In *Proceedings of the 16th annual ACM symposium on User interface software and technology* (pp. 91-94). ACM.
- Kroenung, J., Eckhardt, A., 2015. The attitude cube – A three-dimensional model of situational factors in IS adoption and their impact on the attitude behaviour relationship. *Inf. Manage.* 52 (6), 611–627.

- Kronenfeld, D. 2008. Cultural models. *Intercultural Pragmatics*.
- Krueger, N.F., Reilly, M.D., Carsrud, A.L., 2000. Competing models of entrepreneurial intentions. *J. Bus. Ventur.* 15 (5), 411–432
- Krueger, R.A. and Casey, M.A., 2014. *Focus groups: A practical guide for applied research*. Sage publications.
- Laberge, J.C., Scialfa, C.T., 2005. Predictors of web navigation performance in a life span sample of adults. *Human Factors*, 472, 289-302. Landauer,
- Lachmann, M., Trapp, I. and Trapp, R., 2016. Diversity and validity in positivist management accounting research—A longitudinal perspective over four decades. *Management Accounting Research*.
- Lampe, C., Ellison, N., and Steinfeld, C., 2007. A familiar facebook: Profile elements as signals in an online social network. In M. B. Rosson Ed., *Conference on Human Factors in Computing Systems* pp. 435-444. New York: ACM Press.
- Latifi, S. ed., 2016. *Information Technology: New Generations: 13th International Conference on Information Technology (Vol. 448)*. Springer.
- Lee, D., Moon, J., Kim, Y.J. and Mun, Y.Y., 2015. Antecedents and consequences of mobile phone usability: Linking simplicity and interactivity to satisfaction, trust, and brand loyalty. *Information & Management*, 52(3), pp.295-304.
- Legris, P., Ingham, J. and Collerette, P., 2003. Why do people use information technology? A critical review of the technology acceptance model. *Information & management*, 40(3), pp.191-204.
- Leuthold, S., Schmutz, P., Bargas-Avila, J.A., Tuch, A.N. and Opwis, K., 2011. Vertical versus dynamic menus on the world wide web: Eye tracking study measuring the influence of menu design and task complexity on user performance and subjective preference. *Computers in human behavior*, 27(1), pp.459-472.
- Lidwell, W. Kritina, H., and Jill. B. 2010. *Universal principles of design, 125 ways to enhance usability, influence perception, increase appeal, make better design decisions and teach through design*, USA: Rockport Publishers
- Lin, H., Fan, W. and Chau, P.Y., 2014. Determinants of users' continuance of social networking sites: A self-regulation perspective. *Information & Management*, 51(5), pp.595-603.

- Lin, H., Hsieh, Y.C. and Wu, F.G., 2016. A study on the relationships between different presentation modes of graphical icons and users' attention. *Computers in Human Behavior*, 63, pp.218-228.
- Lindberg, T. and Näsänen, R., 2003. The effect of icon spacing and size on the speed of icon processing in the human visual system. *Displays*, 24(3), pp.111-120.
- Lindgaard, G. Fernandes, G. Dudek, C. Brown, J. 2006 Attention web designers: you have 50 ms to make a good first impression! *Behav. Inform. Technol.*, 25 (2), pp. 115–126
- Lindgaard, G., Dillon, R., Trbovich, P., White, R., Fernandes, G., & Lundah, S. (2006). User needs analysis and requirements engineering: theory and practice. *Interacting with Computers*, 18(1), 47e70.
- Lipford, H., Besmer, A., Watson, J. 2008.'Understanding Privacy Settings in Facebook with an Audience View'. In 1st Conference on Usability, Psychology, and Security. USENIX Association.
- Luna, D., Peracchio, L. A., and de Juan, M. D. 2002. Cross-cultural and cognitive aspects of web site navigation. *Journal of the Academy of Marketing Science*, 304, 397-410
- MacDonald, C.M., 2015. Culture and information architecture: A study of American and Arab academic websites. *Proceedings of the Association for Information Science and Technology*, 52(1), pp.1-4.
- Madejski, M., Johnson, M. and Bellovin, S.M., 2011. The failure of online social network privacy settings. Department of Computer Science, Columbia University, Tech. Rep. CUCS-010-11.
- Magouyrk, C.M. and Parish, S.R., Amazon Technologies, Inc., 2016. Label placement for complex geographic polygons. U.S. Patent 9,245,366.
- Maguire, M. (2001) 'Context of Use within usability activates', *Int. J. HumanComputer Studies* (55), pp. 453-483.
- Maline, C. 2016. Facebook Arabic Rising. [Online]. Available at: <http://www.spotonpr.com/facebook-arabic-uprising/> [Accessed on September 13 2016]
- Mullins, J. 2016. This Is How Facebook Has Changed Over the Past 12 Years.[Online] Available at: <http://www.eonline.com/uk/news/736977/this-is-how-facebook-has-changed-over-the-past-12-years> [Accessed on November 15 2016]
- Maguire, M. (2001). Methods to support human-centred design. *International Journal*

of Human-Computer Studies, 55, 587-634. DOI: 10.1006/ijhc.2001.0503

Maguire, M. (2001). Methods to support human-centred design. *International Journal of Human-Computer Studies*, 55, 587-634. DOI: 10.1006/ijhc.2001.0503

Marcus, A. Ed., 2015. Design, User Experience, and Usability: Interactive Experience Design: 4th International Conference, DUXU 2015, Held as Part of HCI International 2015, Los Angeles, CA, USA, August 2-7, 2015, Proceedings Vol. 9188. Springer.

Marcus, A., 2001. Cross-cultural user-interface design. In M.J. Smith and G. Salvendy Eds.. Proceedings, vol.2, Human-Computer Interface Internet. HCII conferences pp. 502- 505. Mahwah, NJ USA: Lawrence Erlbaum Associates.

Marcus, A., 2005. User interface design and culture. *Usability and internationalization of information technology*, 3, pp.51-78.

Marcus, A., and Gould, E.W., 2000. Cultural dimensions and global Web user-interface- design: What? So what? Now what? 6th conference on human factors and the Web Web site. Reterived October 9, 2008, from [http://www.amanda.com/cms/uploads/media/AMA_culturaldimensionsglobalwebdes ign.pdf](http://www.amanda.com/cms/uploads/media/AMA_culturaldimensionsglobalwebdes ign.pdf) [Accessed 9 December 2015]

Marenkov, J., Robal, T. And Kalja, A., 2016. A Study on Immediate Automatic Usability Evaluation of Web Application User Interfaces. In *International Baltic Conference on Databases and Information Systems* pp. 257-271. Springer International Publishing.

Marques, O., 2016. Social Networks. In *Innovative Technologies in Everyday Life* (pp. 31-44). Springer International Publishing.

Martínez-Ruiz, M.P., Izquierdo-Yusta, A., Olarte-Pascual, C. and Reinares-Lara, E., 2016. Do Affective Variables Make a Difference in Consumers Behavior Toward Mobile Advertising?. *Frontiers in psychology*, 7.

Matsumoto, D. And Juang, L., 2016. Culture and psychology. Nelson Education.

Matusiak, K. (2006). Information Seeking Behaviour in Digital Image Collections: A Cognitive Approach, *The Journal of Academic Leadership*, 32(5), 479-488.

Matusiak, K.K. (2006), "Towards user-centered indexing in digital image collections", *OCLC Systems & Services*, Vol. 22 No. 4, pp. 283-98.

Matusiak, K.K., 2012. Perceptions of usability and usefulness of digital libraries. *International journal of humanities and arts computing*, 61-2, pp.133-147.

- McBroom, W.H., Reed, F.W., 1992. Toward a reconceptualization of attitude-behaviour consistency. *Social Psychol. Q.* 55 (2), 205–216.
- McDougall, S. and Isherwood, S., 2009. What's in a name? The role of graphics, functions, and their interrelationships in icon identification. *Behavior research methods*, 41(2), pp.325-336.
- McDougall, S., Reppa, I., Kulik, J. and Taylor, A., 2016. What makes icons appealing? The role of processing fluency in predicting icon appeal in different task contexts. *Applied ergonomics*, 55, pp.156-172.
- McDougall, S., Reppa, I., Kulik, J. and Taylor, A., 2016. What makes icons appealing? The role of processing fluency in predicting icon appeal in different task contexts. *Applied ergonomics*, 55, pp.156-172.
- Mcgee, M., 2012. Facebook: 3.2 Billion Likes and Comments Every Day. <http://marketingland.com/facebook-3-2-billion-likes-comments-every-day-19978> [Accessed august 26, 2014]
- Mcleod , S 2014. Mixed method- Questionnaires. [Http://www.simplypsychology.org/questionnaires.html](http://www.simplypsychology.org/questionnaires.html) [Accessed October 2015]
- Mehta, G. 2013. *Infinite Ripple - The Social Media Revolution*. United State of America. Available from: <http://books.google.co.uk/books?Id=ppxzmg2ph60candpg=PA33andlpg=PA33anddq=most+Facebook+users+are+from+outside+North+Americaandsource=bandots=iezpdvrerhandsig=9davwt4vu4wdrn-yvhckewy-ikcandhl=enandsa=Xandei=DUK2UcnuOK620QWgyICoBgandved=0CFUQ6AEwBA#v=onepageandqandf=false> [Accessed June 10 2013]
- Microsoft. 2008. Microsoft's Guidelines for accessible Web pages <http://msdn.microsoft.com/library/default.asp?Url=/nhp/Default.asp?Contentid=28000544> [Accessed 9 January 2013]
- Mikalef, P., Pappas, I.O. and Giannakos, M., 2016. Consumer Intentions on Social Media: A fsQCA Analysis of Motivations. In *Conference on e-Business, e-Services and e-Society* (pp. 371-386). Springer International Publishing.
- Moghadam, V.M., 2007. *From patriarchy to empowerment: women's participation, movements, and rights in the Middle East, North Africa, and South Asia*. Syracuse University Press.
- Motti, V.G. and Caine, K., 2016, September. Towards a Visual Vocabulary for Privacy Concepts. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting Vol. 60, No. 1*, pp. 1078-1082. SAGE Publications.

- Munday, J., 2016. *Introducing translation studies: Theories and applications*. Routledge.
- Murray, D.R. and Schaller, M., 2016. Chapter Two-The Behavioral Immune System: Implications for Social Cognition, Social Interaction, and Social Influence. *Advances in Experimental Social Psychology*, 53, pp.75-129.
- Nakamura, C. and Zeng-Treitler, Q., 2012. A taxonomy of representation strategies in iconic communication. *International journal of human-computer studies*, 70(8), pp.535-551.
- Naqvi, S., Thomas, J.F., Agha, K. and Al-Mahrooqi, R., 2014. *Second Language Acquisition and the Impact of First Language Writing Orientation. Methodologies for Effective Writing Instruction in EFL and ESL Classrooms*, p.28.
- Näsänen, R. and Ojanpää, H., 2003. Effect of image contrast and sharpness on visual search for computer icons. *Displays*, 24(3), pp.137-144.
- Ng, A.W. and Chan, A.H., 2008. Visual and cognitive features on icon effectiveness. In *Proceedings of the international multiconference of engineers and computer scientists (Vol. 2, pp. 19-21)*.
- Nielsen Norman Group., 2014. *Icon usability*. Retrieved from <https://www.nngroup.com/articles/icon-usability/> [Accessed at 14 November, 2016]
- Nielsen, J., 2000. *Designing Web Usability: The Practice of Simplicity*. New Riders Publishing: Indianapolis, Indiana
- Nisbett, R., and Miyamoto, Y. 2005. The influence of culture: Holistic versus analytic perception. *Trends in Cognitive Science*, 9, 467-473 Nisbett,
- Norman, D., 1998. *The design of everyday things*. Basic Books, New York.
- Nowak, K.L. and Gomes, S.B., 2014. The choices people make: the types of buddy icons people select for self-presentation online. *AI & society*, 29(4), pp.485-495.
- Nowak, K.L. and Rauh, C., 2008. Choose your “buddy icon” carefully: The influence of avatar androgyny, anthropomorphism and credibility in online interactions. *Computers in Human Behavior*, 24(4), pp.1473-1493.
- Nowak, K.L., 2013. *Choosing Buddy Icons that look like me or represent my personality: Using Buddy Icons for social presence*. *Computers in Human*

Behavior, 29(4), pp.1456-1464.

- Noyes, D., 2015. The top 20 valuable Facebook statistics. Zephoria, Florida, Available from: at <https://zephoria.com/social-media/top-15-valuable-facebook-statistics/> [Accessed 10 February 2015]
- Onwuegbuzie, A.J., Dickinson, W.B., Leech, N.L. and Zoran, A.G., 2009. A qualitative design guidelines for collecting and analyzing data in focus group research. *International journal of qualitative methods*, 8(3), pp.1-21.
- Orlikowski, W.J., 2010. Practice in research: phenomenon, perspective and philosophy. *Cambridge handbook of strategy as practice*, pp.23-33.
- Oshan, M.S., 2007. Saudi women and the internet: gender and culture issues Doctoral dissertation, © Maryam S. Oshan.
- Oshlyansky, L., Cairns, P., and Thimbleby, H. 2007. Validating the Unified Theory of Acceptance and Use of Technology UTAUT Tool Cross-Culturally. In 21st British HCI Group Annual Conference.
- Patterson, J.L., 2015. 1 Child Language Disorders Across Languages, Cultural Contexts and Syndromes. *Multilingual Perspectives on Child Language Disorders*, 14, p.1.
- Pennings, M.C., Striano, T. and Oliverio, S., 2014. A picture tells a thousand words: Impact of an educational nutrition booklet on nutrition label gazing. *Marketing Letters*, 25(4), pp.355-360.
- Pessagno, R., 2010. Design and usability of social networking web sites.
- Phillips, B., and Zhao, H. (1993). Predictors of assistive technology abandonment. *Assistive Technology* 5(1), 36-
- Phillips, B., and Zhao, H. (1993). Predictors of assistive technology abandonment. *Assistive Technology* 5(1), 36-
- Pullin, G. (2011). Design meets disability. Cambridge, Massachusetts: MIT Press.
- Qutub, J., 2008. A cross-cultural comparison of cognitive styles in Arab and American adult learners using eye-tracking to measure subtle differences.
- Ramadan, M.Z., 2011. Evaluating college students' performance of Arabic typeface style, font size, page layout and foreground/background color combinations of e-book materials. *Journal of King Saud University-Engineering Sciences*, 23(2), pp.89-100.

- Rambo, K., 2013. University of Reading The Semiotics of Islamic Online Consumption Interpreting Female Consumer ' s Shopping and Social Networking Behaviour in Saudi Arabia Khulood Abdullah Husain Rambo Thesis submitted for the Degree of Doctor of Philosophy Henley Busine.
- Rau, P.L.P., Huang, E., Mao, M., Gao, Q., Feng, C. and Zhang, Y., 2015. Exploring interactive style and user experience design for social web of things of Chinese users: A case study in Beijing. *International Journal of Human-Computer Studies*, 80, pp.24-35.
- Rau, P.L.P., Plocher, T. and Choong, Y.Y., 2012. *Cross-cultural design for IT products and services*. CRC Press.
- Rauniar, R., Rawski, G., Yang, J., & Johnson, B. (2014). Technology acceptance model (TAM) and social media usage; an empirical study on Facebook. *Journal of Enterprise Information Management*, 27(1), 6–30.
- Reinecke, K. 2010. Culturally adaptive user interface. Phd Thesis, University of Zurich.
- Reinecke, K. And Bernstein, A., 2013. Knowing What a User Likes: A Design Science Approach to Interfaces that Automatically Adapt to Culture. *Mis Quarterly*, 372, pp.427-453.
- Rincon, S.R., 2013. Integrating Cultural Factors in User-Interface Design: The Case of Nasa Colombian Native People (Doctoral dissertation, Télécom Bretagne, Université de Bretagne-Sud).
- Rocheleau, J., 2016. Best Practices for Accordion Menu in Web Design. <https://webdesignledger.com/best-practices-accordions-in-web-design/> [Accessed on December 12,2015)
- Röse, K. 2005. Aspekte der interkulturellen Systemgestaltung. Paper presented at the Mensch und Computer 2005: Kunst und Wissenschaft - Grenzüberschreitungen der interaktiven Art.
- Ross, J. And Gao, J., 2016. Overcoming the language barrier in mobile user interface design: A case study on a mobile health app. Arxiv preprint arxiv:1605.04693.
- Rovira, L.A., Scientific-Atlanta, Inc., 2004. Subscriber television system user interface with a virtual reality media space. U.S. Patent 6,795,972.
- Salem, B. and Earle, N., 2000, September. Designing a non-verbal language for expressive avatars. In *Proceedings of the third international conference on Collaborative virtual environments* (pp. 93-101). ACM.

- Salman, Y.B., Cheng, H.I. and Patterson, P.E., 2012. Icon and user interface design for emergency medical information systems: A case study. *International journal of medical informatics*, 811, pp.29-35.
- Samovar, L.A., Porter, R.E., mcDaniel, E.R. and Roy, C.S., 2015. *Communication between cultures*. Nelson Education.
- Sanders, E. B. N. (2002). From User-Centered to Participatory Design Approaches. In J. Frascara (Ed.), *Design and the Social Sciences: Making Connections*. London, United Kingdom: Taylor & Francis. DOI: 10.1201/9780203301302.ch1
- Sanders, E. B. N. (2002). From User-Centered to Participatory Design Approaches. In J. Frascara (Ed.), *Design and the Social Sciences: Making Connections*. London, United Kingdom: Taylor & Francis. DOI: 10.1201/9780203301302.ch1
- Sanders, E., 2002. From user-centered to participatory design approaches. In *Design and the social sciences: Making connections* (pp. 1-8). CRC Press.
- Saudi gezzett 2014 Facebook and Twitter gain more users in Saudi Arabia. Available from: <http://saudigazette.com.sa/index.cfm?Method=home.regcon> [Accessed July 23 2015]
- Scholtz, J. (2004) 'Usability evaluation', National Institute of Standards and Technology
- Sharma, V., Simpson, R., LoPresti, E., Mostowy, C., Olson, J., Puhlman, J., et al. (2008). Participatory design in the development of the wheelchair convoy system. *Journal of NeuroEngineering and Rehabilitation*, 5, 1e10.
- Shaw, D., 2005. *An Eye-Tracking Evaluation of Multicultural Interface Designs*
- Shearmur, R. and Doloreux, D., 2015. Knowledge-intensive business services (KIBS) use and user innovation: high-order services, geographic hierarchies and internet use in Quebec's manufacturing sector. *Regional Studies*, 49(10), pp.1654-1671.
- Shen, W. and Li, X., 2016. Processing and representation of ambiguous words in Chinese reading: Evidence from eye movements. *Frontiers in Psychology*, 7.
- Shneiderman, B., 1997. Designing information-abundant web sites: issues and recommendations. *International Journal of Human-Computer Studies*, 47(1), pp.5-29.
- Shneiderman, B., 2010. *Designing the user interface: strategies for effective human-*

computer interaction. Pearson Education India,. ISBN 813173255X.

Smit, C. "What Is Uncertainty Avoidance?". Culturematters.com. N.p., 2016.
<https://culturematters.com/what-is-uncertainty-avoidance/>. [Accessed in 13 Nov. 2016].

Solovyeva, E., Sabirova, D. And Morozova, T., 2015. Forming Students' Linguistic and Cultural Competence in Academic Translation and Interpretation Studies. *Procedia-Social and Behavioral Sciences*, 199, pp.415-422.

Spradley, J.P., 2016. *The ethnographic interview*. Waveland Press.

Statista. 2015. [online]. Facebook age group users all over the world Available from: <https://www.statista.com/statistics/271348/facebook-users-by-age/> [accessed January 14,2015]

Statista. 2016. [online]. Facebook users all over the world Available from: <http://www.statista.com/search/?Q=facebook+users> [Access November 3, 2016]

Steyn, P., Salehi-Sangari, E., Pitt, L., Parent, M. and Berthon, P., 2010. The Social Media Release as a public relations tool: Intentions to use among B2B bloggers. *Public Relations Review*, 36(1), pp.87-89.

Stockdale, R., Standing, C., Love, P.E.D. and Irani, Z., 2008. Revisiting the content, context and process of IS evaluation. *Evaluating Information Systems*, 2, pp.35-48.

Stone, D., Jarrett, C., Woodroffe, M., and Minocha, S., 2005. *User Interface Design and Evaluation Interactive Technologies*. San Francisco: Morgan Kaufmann Publishers

Sundar, S. Bellur, J. Oh, Q. Xu, H. Jia., 2014. User experience of on-screen interaction techniques: an experimental investigation of clicking, sliding, zooming, hovering, dragging, and flipping, *Hum.–Comput. Interact.* 29 2 109–152

Sundar, Shyam, S., 2006. Agency and Customization in Interactive Media Top Paper (3). *Proc. the Annual Meeting of the International Communication Association*

Tan, J. and Payton, F.C., 2010. *Adaptive health management information systems: Concepts, cases, & practical applications*. Jones & Bartlett Learning.

Tashakkori A, Teddlie C, eds. *Handbook on Mixed Methods in the Behavioral and Social Sciences*. Thousand Oaks, Calif: Sage Publications; 2003:209-240.

Tashakkori, A. and Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social*

& behavioral research. Thousand Oaks, CA: SAGE Publications.

- Taylor, S., and Todd, P. A. (1995). Assessing IT Usage: The Role of Prior Experience. *MIS Quarterly*, 19 (2), pp. 561-570.
- Tidwell, J., 2006. *Designing Interfaces*, Available from:
<http://www.amazon.com/Designing-Interfaces-Jenifer-Tidwell/dp/1449379702>.
[Accessed 13 September 2014]
- Tidwell, J., 2010. *Designing interfaces: Patterns for effective interaction design*. " O'Reilly Media, Inc."
- Tractinsky, N., 2004. A few notes on the study of beauty in HCI. *Human-Computer Interaction*, 19(4), pp.351-357.
- Tracy-Ventura, N., Dewaele, J.M., Köylü, Z. And mcmanus, K., 2016. Personality changes after the 'year abroad'?: A mixed-methods study. *Study Abroad Research in Second Language Acquisition and International Education*, 11, pp.107-127.
- Tsai, J.L. and Chentsova-Dutton, Y., 2002. Models of cultural orientation: Differences between American-born and overseas-born Asians. In *Asian American mental health* pp. 95-106. Springer US.
- Turkle, S., 2012. *Alone Together: Why We Expect More From Technology and Less From Each Other*. Basic Books, New York
- Van der Heijden, H., 2004. User acceptance of hedonic information systems. *MIS quarterly*, pp.695-704.
- Venkatesh, V., Brown, S.A. and Sullivan, Y.W., 2016. Guidelines for conducting mixed-methods research: An extension and illustration. *Journal of the Association for Information Systems*, 17(7), p.435.
- Venkatesh, V., Morris, M., Davis, G., and Davis, F. (2003) User acceptance of information technology: toward a unified view. *MIS Quarterly*, 27 (3) pp. 425-478.
- Venkatesh, V., Morris, M., Davis, G., and Davis, F. (2003) User acceptance of information technology: toward a unified view. *MIS Quarterly*, 27 (3) pp. 425-478.
- Venkatesh, V., Morris, M., Davis, G., Davis, F., 2003. User acceptance of information technology: towards a unified view. *MIS Q.* 27 (3), 425–478.

- Wagner, R., 2011. Building Facebook applications for dummies. John Wiley & Sons.
- Weber, M.S., Fulk, J. And Monge, P., 2016. The Emergence and Evolution of Social Networking Sites as an Organizational Form. *Management Communication Quarterly*, p.0893318916629547.
- Whittaker, Z. 2011. Why do Facebook users hate change? Retrieved from: <http://www.zdnet.com/article/why-do-facebook-users-hate-change/> September 16 2016
- Wilkinson, C. R., & De Angeli, A. (2014). Applying user centred and participatory design approaches to commercial product development. *Design Studies*, 35(6), 614-631. DOI: 10.1016/j.destud.2014.06.001
- Wilkinson, C. R., & De Angeli, A. (2014). Applying user centred and participatory design approaches to commercial product development. *Design Studies*, 35(6), 614-631. DOI: 10.1016/j.destud.2014.06.001
- Wright, S., 2016. *Language policy and language planning: From nationalism to globalisation*. Springer.
- Xu, C., Ryan, S., Prybutok, V. and Wen, C., 2012. It is not for fun: An examination of social network site usage. *Information & Management*, 49(5), pp.210-217.
- Yamamoto, S. ed., 2015. Human Interface and the Management of Information. Information and Knowledge in Context: 17th International Conference, HCI International 2015, Los Angeles, CA, USA, August 2-7, 2015, Proceedings (Vol. 9173). Springer.
- Yang, X., 2016. The influence of high/low context culture on choice of communication media: students' media choice to communicate with professors in China and the United States.
- Yu, N. And Kong, J., 2015. User experience with web browsing on small screens: Experimental investigations of mobile-page interface design and homepage design for news websites. *Information Sciences*. Available from: <http://www.sciencedirect.com/science/article/pii/S0020025515004363>. [Accessed 1 November 2016]
- Yu, N. And Kong, J., 2016. User experience with web browsing on small screens: Experimental investigations of mobile-page interface design and homepage design for news websites. *Information Sciences*, 330, pp.427-443.
- Yunker, J., 2013. *Beyond Borders: Web Globalization Strategies*. Indianapolis: New Riders,

Zaki, M., 2011. Evaluating college students' performance of Arabic typeface style, font size, page layout and foreground/background color combinations of e-book materials v. 23 p. 89-100

Zhang, T. and Dong, H. (2009) 'Human-centred design: an emergent conceptual model', .

Zhou, J., Rau, P.L.P. and Salvendy, G., 2014. Age-related difference in the use of mobile phones. *Universal Access in the Information Society*, 13(4), pp.401-413.

Appendix

A. Facebook layout

The following are an overview of all the pages found in Facebook :

Setting up an account

This section discusses how the first thing the user comes across when signing in or opening an account. This page provides information for users who want to register for a new account and filling out personal information and includes a wizard that direct them to add friends using a search engine or importing from their email address. Also, existing users can login using username and passwords. Figure 6 outlines the pages and tasks involved in account creation: Figure 8 shows Facebook account creation and log-in page.



This list outlines all of the pages and tasks involved in account creation:

- Create an account
- Find friends
- Create a profile
- Add a profile picture
- Validate your e-mail address
- Log into your account
- Enter your basic information
- Add friends and family information
- Add work and education information
- Add religious and political information
- Add an e-mail account

- Add telephone numbers and address information
- Add instant messaging and website information
- Set a Facebook username

Finding and organizing friends

The personal profile is where users enter their personal information. This serves as the personal page of the user, where everything that the users post in Facebook along with their personal details is located. Table 2 lists all the elements that are included.

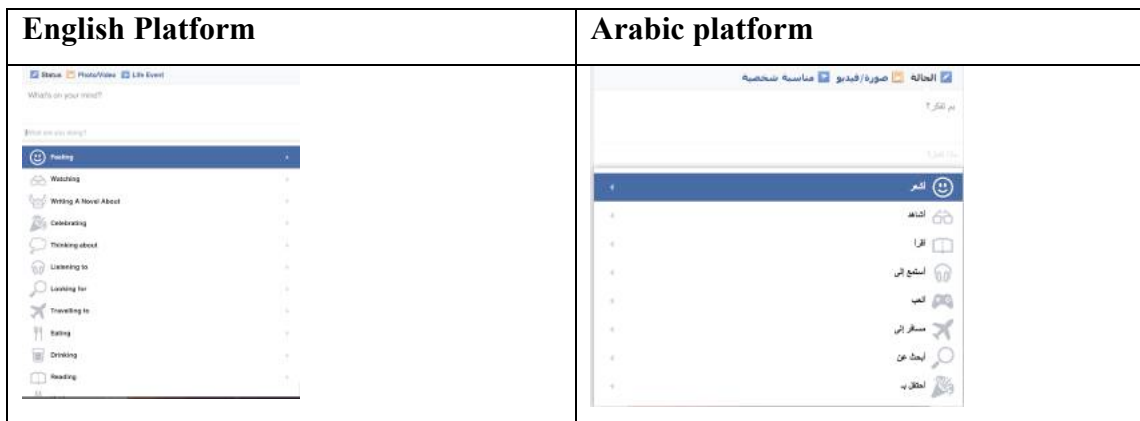
English Platform	Arabic Platform
	

This list outlines the tasks that the user need to understand when adding or finding friends on Facebook:

- Find friends by importing contacts
- Accept and ignore friend's requests
- View your friends
- Un-friend people on Facebook
- Poke friends
- View your friendship with others
- View suggested friends
- View mutual friends
- Add friends to lists
- Edit work and education smart lists
- Edit location-based smart lists
- Rename and manage smart lists
-

Setting your status:

The status posts is where users can comment and share photos or videos to their timeline. This page can allow users to upgrade status, share photos and videos, share external links from the web and share feeling along with comments using emoji. After posting something, it will appear along with the friends statuses in the timeline. Your friend's statuses allow you to like, comment or share emoji faces to reply on your friends post.



The list below describes the tasks that the user needs to know in order to share a status or content with friends:

- Upgrade your status
- Remove a status update
- Edit a status update
- Share uploaded photo and videos
- Share your feeling
- Share a photo or video from your webcam
- Ask a question
- Browse questions
- Follow a question
- Answer a question
- Share a link
- Like content
- Like content on the web
- Turn on subscription
- Subscribe to a person
- Find people to subscribe to on Facebook
- Unsubscribe from a person

Communicating with friends directly

A snapshot of the pages that enable private messages to be sent to friends in the user's list, rather than the messages that are sent to everyone when posted on the user's wall.

English platform	Arabic platform
 <p>The screenshot shows the Facebook messaging interface in English. At the top, there's a search bar and a 'New Message' button. Below that is a list of contacts with their profile pictures and names. A search bar is visible in the middle of the list. The bottom of the screen shows a text input field and a 'Send' button.</p>	 <p>The screenshot shows the Facebook messaging interface in Arabic. It features a search bar at the top, a list of contacts with their profile pictures and names, and a search bar in the middle of the list. The bottom of the screen shows a text input field and a 'Send' button.</p>

The list below outlines the tasks involved in sending private messages:

- Send a private message
- View your messages
- Attach a file to a message
- Attach photo and videos to messages
- Chat with friends
- Chat with multiple friends
- Set who can see you on chat
- Turn chat sounds on or off
- Send messages through chat
- Send Facebook e-mail
- Set up video calling
- Make a view call to a friends

Newsfeed

A profile page, or what Facebook calls the Newsfeed. This serves as the personal page of the user, where everything that they post and all of their personal details is located.

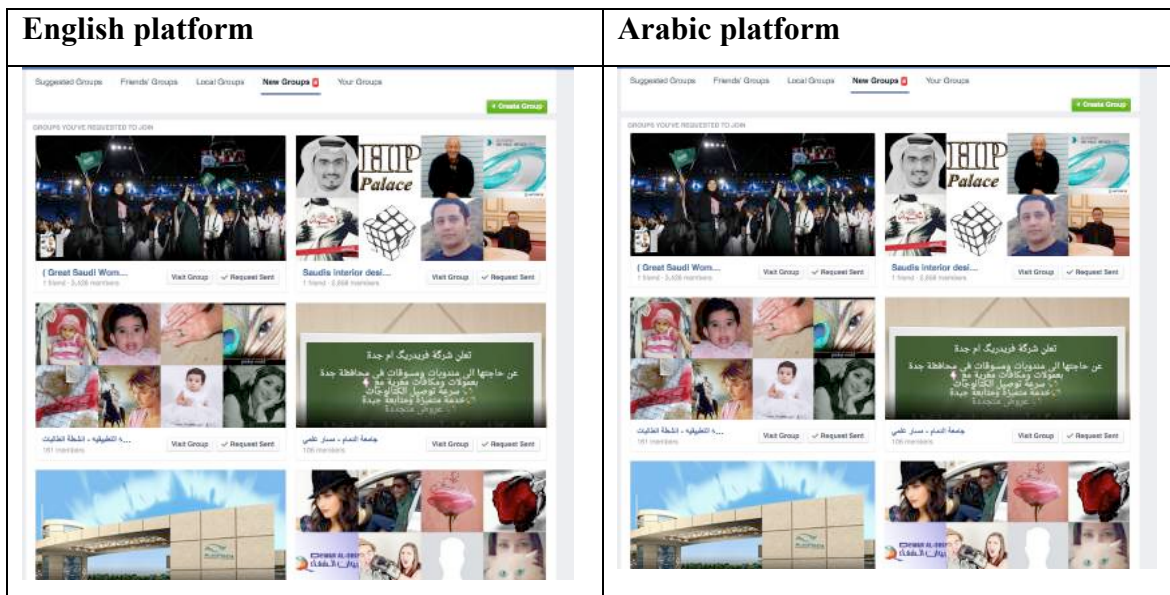


The list below shows the tasks that the user needs to understand when customising their personal profile page:

- Introducing the Facebook timeline and news feed
- Add a cover from your photo
- Upload a cover image
- Share stories
- Add life events to your timeline
- Add photos to your map
- Hide and highlight timeline stories
- Hide and highlight timeline stories
- Hide stories on your news feed
- Sort stories on your news feed
- Comment on a story
- Hide and adjust the ticker

Using groups and events

A snapshot of the pages by which a user can join or create a group in Facebook. This page lists all of the available groups and events, including the ones that the user has already joined.

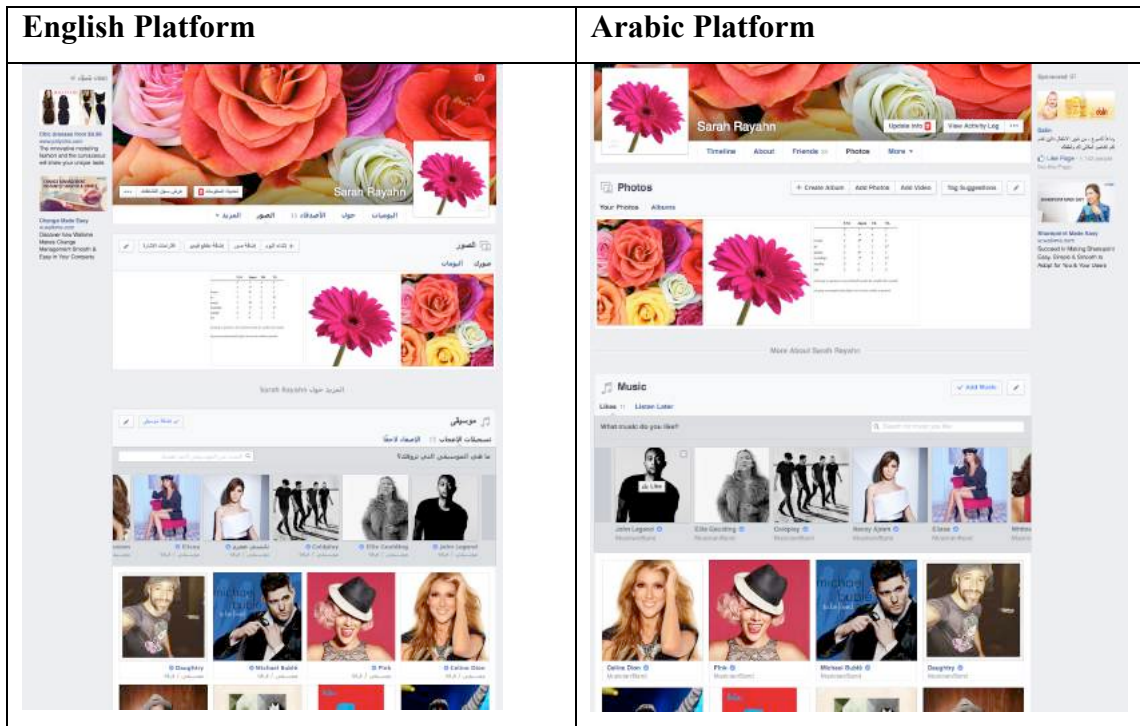


The list below shows the tasks that the user needs to know when adding or creating a group:

- Join a group
- Post a group
- Create a group
- Search within a group
- Add friends to a group
- View your event invites
- Search your events
- Respond to an event invite
- Export events
- Find suggested events
- Invite members of a group to an event
- Add hosts to your events
- Add a photo to an event
- Chat with a group
- Create an event

Sharing photos and video

A snapshot of how to add or edit the user's photos. The user can upload new photos and videos to be displayed in the users photo galleries they can also manage who can see that photo. Also in this page the user can edit their profile or cover page.

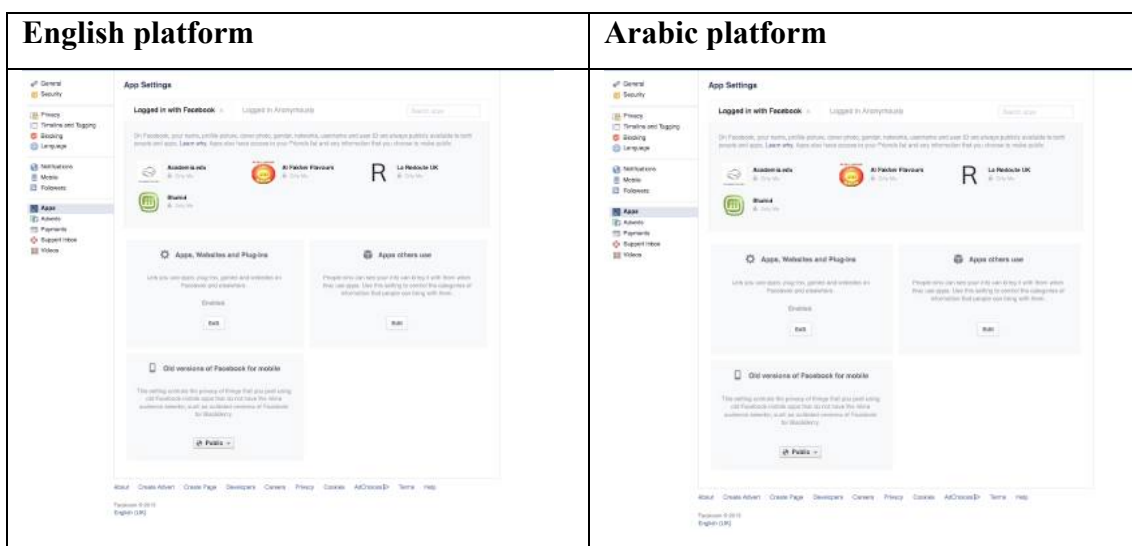


The list below shows the tasks that the user needs to know about when editing their personal photos:

- Upload photo to Facebook
- Upload videos to Facebook
- Organise your albums
- Tag photos and videos
- Edit uploaded photos
- View photos uploaded by friends
- View photos uploaded by friends
- Review photos you are tagged in
- Set an album cover image
- Set an album cover image
- Set a video thumbnail
- Listen to music on Facebook
- Listen to music with friends

Using applications

A snapshot of the Facebook application page, which presents information about all of the third party applications, the developers of which have paid to advertise their programs on the site. This is the page from which the user is able to browse, buy, or block a particular application.

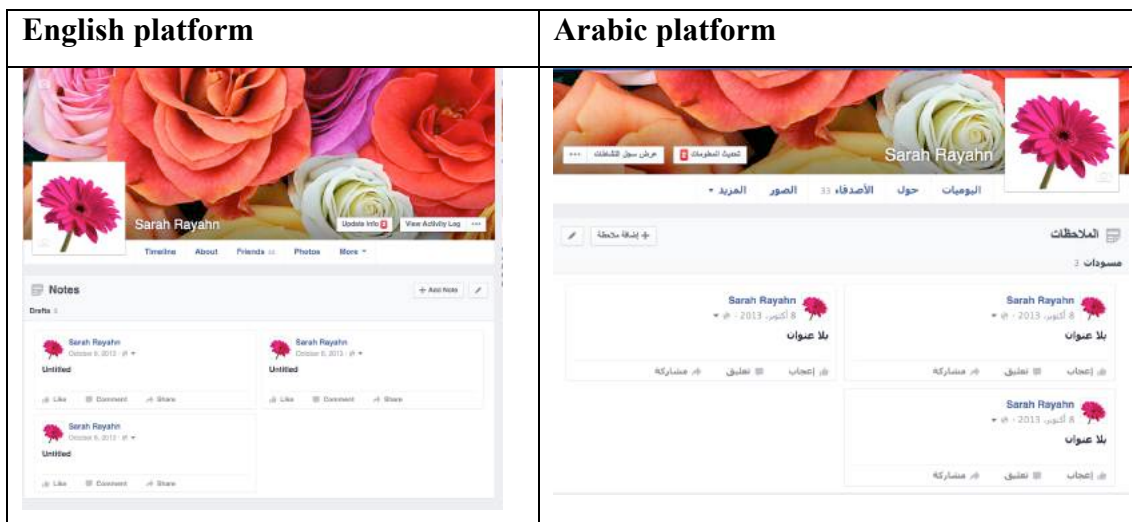


The list below outlines the options available to the user for customising the third party applications accessed through their Facebook account:

- Find apps
- Install an app
- Add apps to your timeline
- Control app information shared with friends
- Remove app
- Add bank account details
- Buy Facebook credits
- Block an app
- Use Facebook social plugins on external sites
- Use instant personalisation on external sites
- Turn off apps

Working with notes

Note-taking page, where the user is able to take notes and write their own blogs. This page can be made public, limited to the friends of the user, or even be made invisible to all other individuals.



The list below shows the tasks the user needs to know for the addition or removal of notes:

- Create a note
- View notes
- Tag notes
- View draft notes
- View notes about you
- Add a photo to a note
- Preview a note
- Edit a note
- Set note privacy
- Apply formatting to a note
- Comment on a note
- Share a note

Setting security:

A snapshot of the security setting page. This is where users can modify and change the settings, according to their personal information and preferences regarding data security and visibility.



The list below shows the tasks that a user must understand with regards to the security settings:

- Set a security question using secure browsing
- Set login notifications
- Set login approval
- Set app passwords
- Edit and view recognised devices
- View your active sessions
- Change your primary e-mail
- Change your password
- Set your language
- Link your accounts
- Download your Facebook data
- Deactivate your account

Setting privacy:

The setting page where users can modify their settings to customize their information privacy to prevent users from seeing their unwanted information. For example for females in Saudi Arabia where they are able to control who can see their personal picture. A snapshot of the page that enables the privacy settings to be customised. This is the page where a user can choose what is hidden or made visible to others.

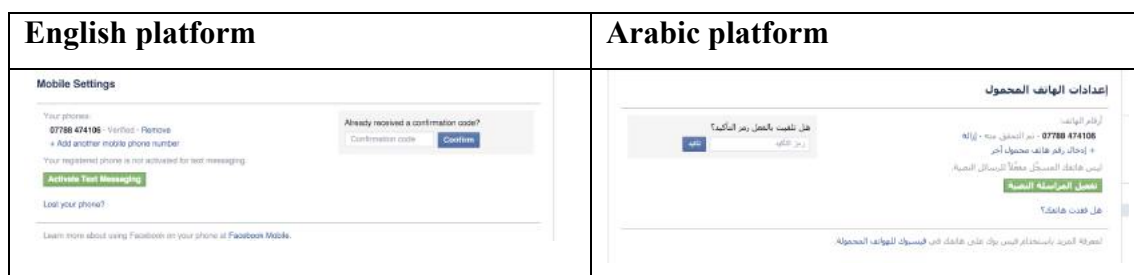
English Platform	Arabic platform
<p>Privacy Settings and Tools</p> <p>Who can see my stuff?</p> <p>Who can see your future posts? Only Me Edit</p> <p>Review all your posts and things you're tagged in Use Activity Log</p> <p>Limit the audience for posts you've shared with friends of friends or Public? Limit Past Posts</p> <hr/> <p>Who can contact me?</p> <p>Who can send you friend requests? Everyone Edit</p> <p>Whose messages do I want filtered into my inbox? Strict Filtering Edit</p> <hr/> <p>Who can look me up?</p> <p>Who can look you up using the email address you provided? Friends Edit</p> <p>Who can look you up using the phone number you provided? Friends Edit</p> <p>Do you want other search engines to link to your Timeline? No Edit</p>	<p>إعدادات الخصوصية وأدواتها</p> <p>من يستطيع رؤية منشوراتي؟ من يستطيع رؤية منشوراتي المستقبلية؟ الأصدقاء تعديل</p> <p>مراجعتي كل منشوراتي والمنشورات التي تم الإشارة إليها استخدم سجل النشاطات</p> <p>هل ترغب بتحديد الجمهور للمنشورات التي شاركها مع الأصدقاء أو العامة؟ تقييد المنشورات السابقة</p> <hr/> <p>من يستطيع الاتصال بي؟ من يستطيع إرسال طلبات صداقة إلَيَّ؟ أصدقاء الأصدقاء تعديل</p> <p>رسائل من أرباب تصانفها إلى مربع الوارد؟ تفويض أسياسي تعديل</p> <hr/> <p>من يستطيع البحث عني؟ من يستطيع البحث عني بواسطة عنوان البريد الإلكتروني الذي قدمته؟ الأصدقاء تعديل</p> <p>من يستطيع البحث عني بواسطة رقم الهاتف الذي قدمته؟ الأصدقاء تعديل</p> <p>هل ترغب في ربط محركك بحث آخرى بـTimeline؟ لا تعديل</p>

The list below shows all of the pages and tasks that must be available to users wishing to customize their privacy settings:

- Use the audience selector to control privacy
- Create a custom privacy setting
- Set default privacy levels
- Control your profiles appearance in search engines
- Control how you connect with others
- Set who can see and post on your timeline
- Turn on profile review
- Turn off tag suggestions for photos
- Set access levels for Facebook apps
- Block Facebook users
- Limit the audience for past posts
- See what your timeline looks like to other people

Accessing Facebook mobile

A snapshot for the page that enables a mobile phone to be connected to Facebook.

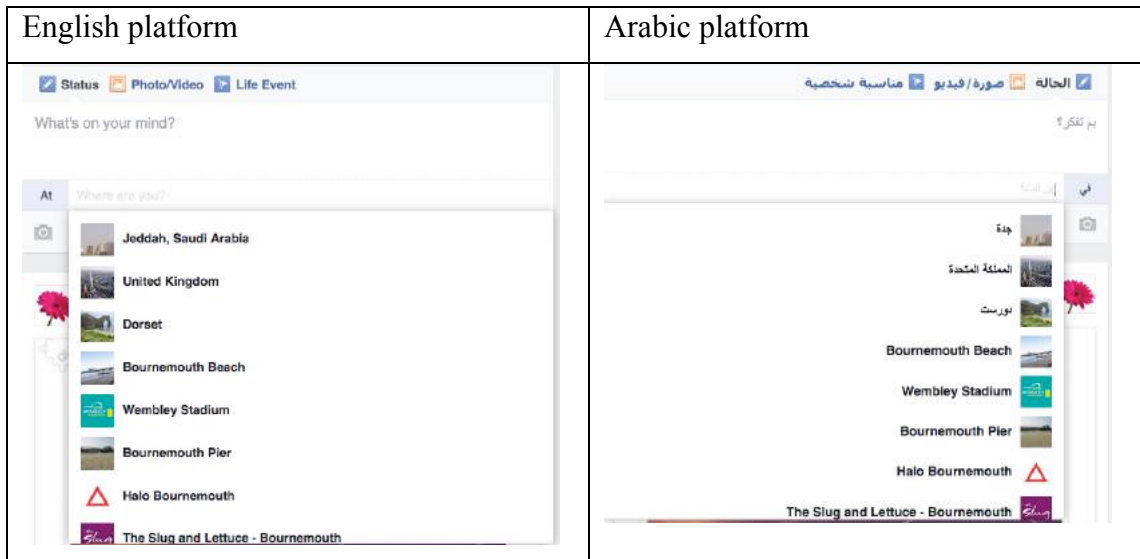


The list below shows the tasks that the user needs to know when setting up their mobile phone:

- Introducing Facebook mobile
- Access Facebook mobile on an smart phones application
- Access Facebook mobile on an iPad
- Access Facebook mobile on android
- Update your status via the Facebook iPad app
- Take an upload photo with the Facebook app
- Upload photos on your device with the Facebook app
- Use the Facebook messenger app
- Use the Facebook camera app
- Activate Facebook text messages
- Upload photos to Facebook via e-mail
- Access your mobile timeline
- Set up Instagram to post Facebook photos

Using locations services on Facebook

This feature is located in the users statuses where you can click on share location to add with the post their sharing. This service enables the user to post a comment, either on their wall or on the wall of one of their friends, along with the location service. The figure bellow shows the tasks that the user needs to know when sharing locations:

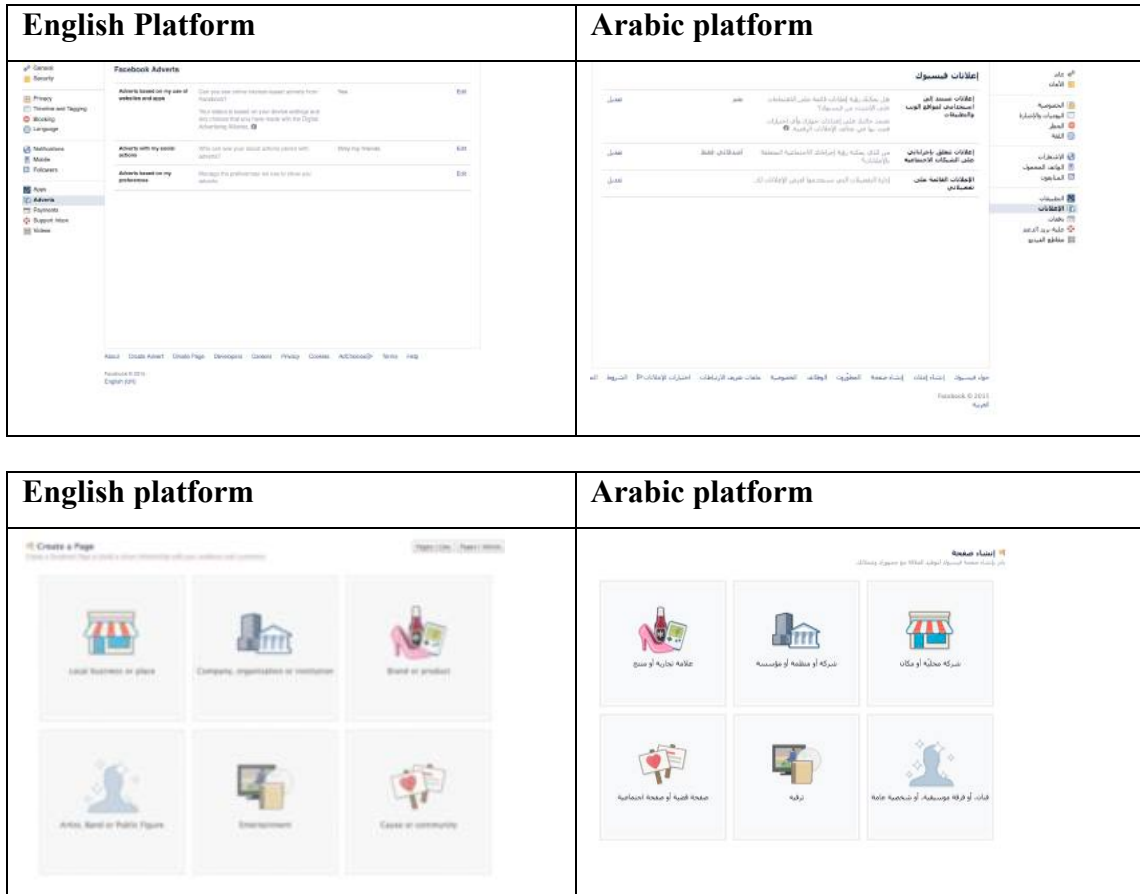


The list below shows the tasks that the user needs to know when sharing locations with friends:

- Check in to a location with Facebook app
- Add your location to a Facebook post
- Add locations to views
- Add locations to photos
- Change or update a story location
- View the page for a location
- Share location on Facebook
- Add a location to your map
- Join a network on Facebook

Understanding Facebook advertisements

A snapshot of the Facebook advertisement control page, which enables a user to advertise a product or service. illustrates how a user can create and customise a page, as well as how friends can be added to that private page.



The list below shows the tasks involved in customising Facebook advertisements, as well as when creating a page in Facebook:

- Create a Facebook page
- Update your page inform
- View page admin and insights
- Invite people to view your page via e-mail
- Invite Facebook friends to view your page
- Adjust notification settings for your page
- Add a featured owner to your page
- Like a page on Facebook
- Add page like to improve ads that you see
- Manage your ad complains

Facebook Layout History

The following are list of changes that Facebook from the year of 2005-2014:

Year	Changes
2005	<ul style="list-style-type: none"> • The original logo was called (thefacebook), which was placed on the right corner on the banner. • Placed the main menus under the logo on the right. • Navigation links to other features were placed on the left, underneath the search engine. • Placed a column where users could add a profile picture and links to their personal account, on the left side beside the menu. • Added a column listing personal information to the right side of the page.
2006	<ul style="list-style-type: none"> • Added a new column for friends, along with their profile pictures, on the left. • Added a personal statement fields where users could add content, such as a favourite quote for friends to read. • Enabled users to add photos, messages and notes. • Changed the colour to a lighter blue font in the column headings.
2007	<ul style="list-style-type: none"> • Changed the logo name from “theFacebook to “Facebook” and situated this on the far left of the banner. • Moved the main menus to the top middle of the page. • Added links to sub-menus from the left side on the banner. • Enabled music in a new column that included a user selected playlist, which was placed on the left side of the page.
2008	<ul style="list-style-type: none"> • Added a chat feature. • Enabled users to add applications tables to their profile. • Reduced the banner size across the top. • Moved most of the icons and notifications to the right column. • Moved the news feed and friends list to the same column, separating them with a fine line.
2009	<ul style="list-style-type: none"> • Enabled users could add links, photos, and videos to text posts in the news feed. • Allowed users to become a fan of specific pages. • In their newsfeed, users became able to see the profile picture of each poster. • A uniform white background colour was provided for the whole page, which made the page appear cleaner and more legible.
2010	<ul style="list-style-type: none"> • Added the photo and name of users to the top of their messages. • Allowed users to customise their banner on top of their profile. • The icons for notifications, adding friends and sending personal messages was moved to the left of the logo. • A bookmark column was added to allow links to user groups, news pages, advertisements, the developers page, and other pages the user had joined. • A request column was added on the right where users could see notifications of pending friend requests and event invitations.
2011	<ul style="list-style-type: none"> • A new “view as” widget was added in the upper right-hand corner of the page, allowing users to preview how others view their page.
2013	<ul style="list-style-type: none"> • Larger pictures are displayed. • All the navigation icons and links were placed on the left, with a darker

	<p>background.</p> <ul style="list-style-type: none"> • The site logo changed from 'Facebook' to 'f'. • The settings icon was moved to the top right of the page. • A link to the news feed and friends list was added to the column on the left.
2014	<ul style="list-style-type: none"> • The background colour of the menu on the left side changed from blue to white. • The profile picture size was reduced. • A column was added to the right with a list of friends who had posted or liked other posts. • Left menu sections became movable. • Website links were changed to display automatically. • Posts to page were made by placing more visible in the home page. • A function was added to enable a snapshot of page action to be available on hover.

B. Interview

The following table lists are all the questions and responses that were conducted in the interviews.

Saudi living in Saudi – Arabic users (SS_A)

Questions	SS1_A_F	SS2_A_M
Gender and age	Female 18	Male 31
Social media preference	Facebook, twitter ,instagram	Facebook, twitter ,instegrame
How long using Facebook	3 years	5 years
How many times open and comment or contact users	Open Facebook maybe 1 a month Comment maybe 2-3 a year	Open Facebook 2-3 a month. Comment 1 or 2 every month
Is there any errors in translation? Does it effect your attitude towards Facebook	The wording of sentences is confusing when reading the text..... The translated Arabic version has some inconsistency with the dialect	Translating the Arabic context and using English text for names and locations are confusing When surfing I find that there are grammar errors in Arabic text The wording of sentences is confusing when reading the text
Do you see the icons are clear and easy to understand	Facebook designed the icons without considering their meaning which is confusing	Navigation through the pages of the news feed and settings is hard and confusing because of the irrelevant labels of the text
Do you see any problems with alignment that should be improved	Navigation through the settings page is hard and confusing due to design of the page	The settings page positioning of elements prevents me to change most of the settings
What are the Positive about the layout design	Communication with friends Sharing photos and videos	Personalizing my account Sharing posts with friends and family Adding pictures in profile page
What are the Negative about the layout design	Navigation through the menus that are not related to their meaning makes the navigation hard	The profile page and news feed has so many navigation possibilities, which makes the page look crowded and hard to navigate. “ Facebook is complicated to use as compared to twitter because it has less features to navigate.”
Do the above issues affect you from interacting with Facebook? List down the features that you never used in Facebook	The English version is designed better then the Arabic version The date used in Facebook is Gregorian not according to the Hijri Calendars, which we follow. I try not to navigate too much in Facebook due to misunderstand of the icons and text	“ I do not know how to create groups events and pages”

	<p>“ I do not use most of the settings due to confusion of what they mean</p> <p>“ I don’t use the location settings when posting on Facebook because it is not accurate”</p> <p>“Do not to add notes in ‘Note pad’ because I don’t know how to use it”</p>	
--	---	--

Questions	SS3_A_E	SS4_A_E
Gender and age	Female 28	Male 24
Social media preference	Facebook	Facebook
How long using Facebook	9 years	6 years
Do you prefer using the web or phone more when opening Facebook	Both but mostly the web. The mobile version has no Arabic only the number are translated	I only surf Facebook on my mobile. I do not interact or post anything with mobile
How many times open and comment or contact users	1-2 a day 1-2 a month	1 a day 2 every month or less
Is there any errors in translation? Does it effect your attitude towards Facebook	Yes. There is grammar error and the words used in menus and translating the text in the home page and news feed. However, I have been using Facebook for 9 years and I got use to it	Yes. There are lots of funny words that mean nothing. The menus translation is describing the page in a funny way. I got use to the Arabic translation found in Facebook. Therefore, it does not bothers me and I still interact with my friends and family
Do you see the icons are clear and easy to understand	I don’t understand them I ignore the images (which is also hard to find because of the wording they used)	The current Icons does not mean anything to me. But I got use to it and just read the labels
Do you see any problems with alignment that should be improved	The alignment of the text in the home page and profile page is not right some in the right and some in the left which makes reading hard.”	Yes the alignment of text is not right and should match the other Arabic words.
What are the Positive about the layout design	Scrolling up and down to see the news and friends post is nice Easy to comment and like a post. Sharing photos and videos is easy The chat in the bottom of the home page is useful	Socializing with friends direct and looking at the timeline is nice to have.
What are the	Do not like the translation.	The translation should be better.

negatives about the layout design	Do not like the icons in menu. Too many menus and stuff in the page. Do not like the advertisement on the page	The icons should mean the same as the labels
Do the above issues affect you from interacting with Facebook? List down the features that you never used in Facebook	Yes. If the translation and the layout is designed simple I may reconsider socializing with friends more. Make the design of the layout to be clear. If the issues of translation and layout was solved it will make my navigation easier”. Translation should be clear The layout should be changed to fit the Arabic text	I got use to the terms and the way Facebook is designed. It does not bother me because I am adapted to it. If Facebook fixed the translation and the menu in the layout is clear I would enjoy it better.

Questions	SS5_A_E	SS6_A_E
Gender and age	31 Female	33
Social media preference	I like Facebook, twitter, snap chat, instegram	Facebook
How long using Facebook	6 years	10 years
How many times open and comment or contact users	I open it every day I comment maybe 2-3 a week	20 times a day 3 times a day
Is there any errors in translation? Does it effect your attitude towards Facebook	I do not read the error that is found Facebook as long as I can see my friends post and comment on their wall	Yes. Wording in menus Confusing the placement of the Arabic words and English in the same sentence makes my navigation process hard to follow. The Arabic translation sometimes hesitates my discussion when changing the settings. The word in Arabic has so many meaning and not precise as in English.
Do you see the icons are clear and easy to understand	I don't care about the icons it does not mean anything to me I just pretend it is just a random image	The icons are Confusing and grouping the menus in the same place makes it either confusing. Navigation should be better
Do you see any problems with alignment that should be improved	The translation should be right to match the direction of the rest of the images which currently it is just random text that is placed in the page which is confusing to look at”	The positioning of the text is Confusing My eye start on the right therefore positioning the menus on the right of the banner is better. This way it prevents me to look for it. The settings are very hard to read I usually place a ruler in each line to read the sentence. Too much text in the settings. I think if there is a bubble that I can hover over the settings is better then displaying the text all

		at once.
What are the Positive about the layout design	Communicating with my friends back home and family is easy. I can see their comments on the page very easily.	Chatting with friends The banner is stayed in place no matter what page I am surfing.
What are the negatives about the layout design	There is too many stuff in the left and right hand side of the home page and in profile page which makes me don't know where to go. The icons in the post dialog box should have meaning because it does not have labels The icons on top should also be designed right because it does not have labels The menus in the settings page is too much to read The settings should be designed so much easier because it is the most important part of Facebook.	Timeline is okay but maybe it should present the news in a better way Putting like and dislikes is also a culture issues because sometime a disruptive news where users not sure if they should like the post or dislike the news. Most of the buttons and navigation facebook places "dotes" to represent more option. Which is very confusing and does not mean anything. Confusing whether or not like or dislike peoples post or videos. Translation and the menus in Arabic is not right and in the news feed they place dots in the Arabic because there is not enough space which is an issue. When posting something on Facebook there is only one button and there is no alternative button to
Do the above issues affect you from interacting with Facebook? List down the features that you never used in Facebook	I don't add groups or events in Facebook because I don't know how. I don't use the applications in Facebook because I don't know how. I don't do advertisement on Facebook because I don't know how.	Confusing. And makes me hesitated to do actions on Facebook and click on something that is not right.

Saudi living in UK- English platform users (SO_E)

Questions	SO1_E_M	SO2_E_M
Gender and age	Male 19	Female 32
Social media eference	Facebook and twitter	Facebook and twitter all the same preferences
How long using Facebook	5 years	8 years
How many times open and comment or contact users	Every two weeks or more both opening and commenting	Opening 3-4 a week Commenting every maybe once a week
Are there any errors in translation? Does it effect your attitude towards	The numbers used is wrong because it is written English not in Arabic	I have English friends and all my friends' uses the English version.

Facebook		
Do you see the icons are clear and easy to understand	Choosing through the icons to locate where to go is confusing. The design of the icons does not have any meaning to me and makes the whole layout look weird. Indeed, I am not happy with using it	I don't understand 70% of the icons most of them do not mean anything and is irrelevant to the text.
Do you see any problems with alignment that should be improved	The alignment should be improved as the text and the menu in the layout is placed inconsistent.	When you read through the news feed, the text is sometimes aligned to the left and sometimes to the right, which is confusing
What are the positive you see in Facebook	Easily replying to the posts from friends and see their storyline in the same page which is why I use Facebook	I use Facebook because all my friends post their views of different news and comments. Which is very convenient to have and find it entertaining to watch in my spare time.
What are the negative you see in Facebook	There are too many navigation possibility placed in the news feed which make it hard from me to choose from	Most of the elements that is in the news feed and settings I don't use due to misallocating where they are
Do the above issues affect you from interacting with Facebook? List down the features that you never used in Facebook	I don't use most of the settings because the menus are too many. I prefer the English layout as it is more clear and easier to navigate I prefer using twitter to post comments or news.”	I don't change most of the settings and leave it as default due to complexity of the settings I do not share personal photos“ I don't know why people use the notes in Facebook

Questions	SO3_E_M	SO4_E_M
Gender and age	Male 27 years old	Male 25
Social media preference	Both Facebook and twitter is the same preference	Facebook
How long using Facebook	8 years	7 years

How many times open and comment or contact users	2-3 times a day 1 time a week	1-2 times a week
Are there any errors in translation? Does it effect your attitude towards Facebook	Yes. The way that the menus are labelled is confusing The translated text in the homepage is not consistent and confusing The numbers are written in English and some words are not translated makes the whole sentence confusing and hard to read. The settings page is okay but it could be written simpler. The English version is designed better with their text that is why I use English version” The layout of all the pages matches the English words more then Arabic version	I don't like the Arabic version because of the translation issues. When Facebook introduced the Arabic I tried to use it but it was confusing and did not enjoy it. The issues regarding menu and the translation used in the home page, newsfeed and settings page is not enjoyable to read. Therefore using the English version is better not because of the English words but because it is designed well with the English and there is no issues regarding positioning or placement of text issues.
Do you see the icons are clear and easy to understand	I gave up on looking at the icons in Facebook because they do not mean anything. Facebook always change the design of the icons and menu so it is hard to follow or memories what icons means what. Some icons are totally irrelevant and they use the same icons to different things.	Icons do not mean anything to me. I got use to the way Facebook is designed as it is not very well but because I use it almost every day it does not bother me anymore.
Do you see any problems with alignment that should be improved	Yes. Everything should match the Arabic text. Putting all the text from right to left instead of left to right, which makes the whole layout confusing to look at.	“The alignment of text in the menus and the settings page should be designed well to be more clear and easy. Because with these issues I it prevents me to change the settings.”
What are the Positive about the layout design	Timeline where I can scroll down to see my past posts. Looking at all my friends posts in	I like the home page and time line and looking at friend's posts is easy to locate.

	<p>the same page makes it easier</p> <p>Placing all the settings page in the same page makes it easy to know where it is located</p> <p>Posting anything in my timeline is very easy</p> <p>Commenting or sharing post from my friends is easy</p>	
What are the negatives about the layout design	I don't like the Arabic version as it has so many issues such as placing the text and designing the user interface to suit the text is very hard and makes me use the English better	As I got use to the design of Facebook. I still see the Arabic version has issues such as menus and translations.
Do the above issues affect you from interacting with Facebook? List down the features that you never used in Facebook	Yes. I don't use the Arabic at all, which is sad because I feel more comfortable with the Arabic layout but unfortunately I am not happy with the user interface.	Yes. The issues of menus translation and positioning prevents me to use the Arabic version. It prevents me to change the settings for privacy issues. It prevents me to enjoy looking at the timeline in the home page and profile page

Questions	SO5_E_M
Gender and age	Female 33
Social media preference	Facebook
How long using Facebook	9 years
How many times open and comment or contact users	Every day I don't comment or post anything. Last time I posted was 2 years ago
Are there any errors in translation? Does it effect your attitude towards Facebook	Yes. I don't understand most of the terminology used in the menus. There is too much translation issues in the home page and news feed The settings page is confusing I don't have time to read all the settings

Do you see the icons are clear and easy to understand	I don't like them. I think they should be designed more to the context and the page. They should design the icons more bigger and find the page easier
Do you see any problems with alignment that should be improved	The text is not aligned with the page correctly which makes the layout look weird" Positioning of menu should match the text The settings page should be designed better I think they should remove most of the text and place more menu instead of links
What are the Positive about the layout design	I enjoy looking at my friends post in the home page it reads like a newspaper and does not allow me to click through each friend to see what he or she are posting. I like how you can comment and share your comments with others it is very easy and user friendly.
What are the negatives about the layout design	I don't like the terminology used in the menu They should remove most of the menus in the side of the page to make the home page and profile page looks simple and easy to use. There are lots of menu on the top that means the same thing in the side of the page making it hard to locate.
Do the above issues affect you from interacting with Facebook? List down the features that you never used in Facebook	Yes. I don't like the Arabic version and will not use it unless they fix the issues

Participants who rarely use Facebook- Saudi

Questions	SS7_A_M	SS8_E_M
Gender and age	Female 34	Female 31
Social media preference	Facebook	Facebook
How long using Facebook	8 years	7 years
How many times open and comment or contact users	Open 1 every two month Do not share anything.	Open it maybe 1-2 times a month or less. Comment on big events like birthday wishes from my friends and

		wedding day or birth of a baby
Are there any errors in translation? Does it effect your attitude towards Facebook	Yes. The translation is wrong I don't like it	I used the Arabic maybe 3 times and I don't like it
Do you see the icons are clear and easy to understand	Does not mean anything and is not related.	Yes the icons are the same as the English it does not mean anything to label therefore I just ignore it.
Do you see any problems with alignment that should be improved	Should be redesigned simpler and easier.	The positioning of text and the menu placement in the settings page should be better designed to suit the Arabic users.
What are the Positive about the layout design	The thing that allows me to stay connected with Facebook is because all my friends use Facebook and therefore all their interest and news are in Facebook.	Receiving comments in my profile is nice. Looking at my friends in the home page is nice. The design of the timeline is nice.
What are the negatives about the layout design	I don't like the Arabic version and I don't understand English.	The Arabic version is not right there are so many aspects that could be redesigned for me to use the Arabic version. Such as the translation, menus layout design
Do the above issues affect you from interacting with Facebook? List down the features that you never used in Facebook	Yes. If the design of the layout is simpler and the translation is made better. I will use Facebook more often and enjoy it better	Yes. It prevents me to use the Arabic version. Example taking decisions in Facebook. Menu description is sometimes confusing I am afraid to do decision when interacting with other people.

Participants who rarely use Facebook- UK

Questions	SO6_A_F	SO8_E_F
Gender and age	Male 24	Female 21
Social media preference	Facebook	All social media no preference
How long using Facebook	5 years	3 years
How many times open and comment or contact users	3 times a week Do not post anything in the timeline	I open Facebook maybe once a week or maybe less I comment on my relatives comments only
Are there any errors in translation? Does it effect your attitude towards Facebook	Yes. Translation is issue navigation through the menus is very hard to make the decision. The translation makes me confused and do not motivates me to surf on Facebook	The Arabic is hard to read because they use formal Arabic and I am not good in formal Arabic (fosaha)
Do you see the icons are clear and easy to understand	No they do not mean anything and it is hard to understand what it is	Maybe 90% of them I don't understand and it is hard for me to identify what the page is about.
Do you see any problems with alignment that should be improved	Placement of the menu in the banner should be placed in the right. Positioning of the settings should be designer better because it is confusing to go over all the text	Yes the text is not aligned correctly with the Arabic. The alignment of icons is confusing because of the translation labeling.
What are the Positive about the layout design	The timeline and profile page is a good idea that Facebook decide to have.	I enjoy interacting with friends in the timeline.
What are the negatives about the layout design	Grammar, Icons, Setting and Positioning	The translation. Too much text in the page. Too much menus in the layout. Settings page is hard to read
Do the above issues affect you from interacting with Facebook?	Yes. If the layout and translation issues were designed better I would enjoy using Facebook more often and change the settings for privacy issues which	I find Facebook is hard to post personal stuff because of the privacy. The navigation in the settings is hard and makes me dizzy with all the text

List down the features that you never used in Facebook	is the reason why I don't use it more often	
---	---	--

Saudi prefer Twitter more then Facebook

Questions	SS9_A_F
Gender and age	Male 37
Social media preference	Twitter
How long using Facebook	3 years
How many times open and comment or contact users	1 every month 1-2 a year
Are there any errors in translation? Does it effect your attitude towards Facebook	The translation is not right. The wording is very formal and could mean different things which is confusing.
Do you see the icons are clear and easy to understand	The icons and labels does not relate to the meaning of the page. It makes me confused and lost in navigation
Do you see any problems with alignment that should be improved	The alignment should match the text. The settings page could be designed in different alignment to improve usability
What are the Positive about the layout design	
What are the negatives about the layout design	The layout in Arabic is very confusing. The text is not translated right The layout looks weird to interact with because everything not alignment right.The icons do not mean anything and makes the navigation hard. The home page and news feed is hard to look at because there are too many things going on.
Do the above issues affect you from interacting with	I don't like to use Facebook because I the Arabic version is complicated to interact with. If the design of the layout and translation were designed better and simpler I would consider using it more.

Facebook? List down the features that you never used in Facebook	
---	--

Questions	SO9_E_E	SO10_E_E
Gender and age	Female 24	Female 21
Social media preference	I do not have preferences I use all the social media as it has different functionalities	I use Facebook and twitter very often and cant live without it
How long using Facebook	5 years	5 years
How many times open and comment or contact users	I open it every hour or maybe more because I want to keep updated with news and posts from my friends and family	I open it many times I cant remember maybe 20 times a day
Are there any errors in translation? Does it effect your attitude towards Facebook	The translation of terms used in icons and sometimes the text in the news feed is confusing and there are lots of grammar mistakes	I don't remember the Arabic but I do remember that I stopped using it because of the terminology used in Facebook makes me confused and do not easily interact with the interface as English
Do you see the icons are clear and easy to understand	I have been using Facebook for a long time and it does not interfere my interaction with the interface. Even though it is nice to have an icon that is clear because it will improve the usability when navigating	Yes. The icons are hard to understand and too small. But it does not stop me from navigation and I know where all the settings are located
Do you see any problems with alignment that should be improved	No I don't see any issues but in the Arabic translated version it may be a big issues with the usability because most of the text is not consistent and aligned all in the same direction	I don't have any issue in the English version but maybe in the Arabic version it will be nice to redesign the settings page and make it more visual which may improve the usability.
What are the Positive about the layout design	Socializing with friends and keep connected with them using the timeline and chat that is available. In fact I cannot live without Facebook, as it is the main source to keep connecting with friends interest and socialize with them informally.	I like using Facebook it has many features to interact with friends and do stuff with them. For example I always play games in the applications with my friends and keeping my friends from when I was kinder garden is the same social media is nice to have.
What are the negatives about the layout design	The negatives is the translation of the Arabic version should be redesigned with its elements to suit more to the Arabic users	I don't see negatives on the English version. Maybe the design of the icons and translation of the Arabic improve the layout.

<p>Do the above issues affect you from interacting with Facebook?</p> <p>List down the features that you never used in Facebook</p>	<p>I got use to the English version of Facebook and I may not go back to the Arabic. Unless it is redesigned better and the design is more users friendly and does not have issues I may consider using the Arabic version.</p>	<p>Nothing to think about. Because I got use to the interface and may be adapted to use it</p>
---	---	--

Saudi living UK extensive Facebook users

Questions	SO11_A_M	SO12_A_F
Gender and age	Female 31	Female 27
Social media preference	Facebook	No preference all the same
How long using Facebook	3 years	4 years
How many times open and comment or contact users	5-6 times a day I post whenever I find an event to comment	Maybe 8 times a day Maybe 3-6 times a week
Are there any errors in translation? Does it effect your attitude towards Facebook	Some terminologies used could be confusing	Grammar in the news feed and home page
Do you see the icons are clear and easy to understand	Yes there are some issues with the design does not meet the meaning of the icon	Maybe the ones used from applications are the once that is not designed well. And sometimes Facebook uses the same icons for another once
Do you see any problems with alignment that should be improved	Positioning of the text maybe I am not sure about the settings maybe if it was designed better I would enjoy it	I am not sure.
What are the Positive about the layout design	Interacting with friends and family all in the same platform	I like how you can share almost anything with other friends and in the same place. I also like how I can contact my friends easily
What are the negatives about the layout design	The icons and terminology used in the menu could be redesigned better to suit the understanding	The layout should be designed simpler and limiting the menus that is found in the home page and news feed.

	Easier settings page that is more simple and less text	Settings page should be more clear and simpler to use as it is the most important page in Facebook
Do the above issues affect you from interacting with Facebook? List down the features that you never used in Facebook	Yes the translation of the Arabic prevents me to navigate through the home page and profile page as the 2 languages frustrates me when they are in the same sentence. This allows me to just open Facebook and look at the videos and photos and do not bother who sent me the post because I don't want to get frustrated. Which limits me to open Facebook very often.	I cannot think of something as I don't really know how to advertise' and use 3 rd party applications. Also I don't know how to listen to music lives they say

Behaviour of the participants in the interview

Behaviour	P	Quotes
Accept And Use With Perception Of Problem	SS4_A_E	<i>"Icons does not mean anything to me but I got use to it"</i> SS4
	SS3_A_E	<i>"I don't understand icons but I ignore the images (which is also hard to find because of the wording they used is wrong also)."</i> <i>"The chat in the bottom of the home page is useful."</i>
Hesitating To Do Interaction Just Following Up (Disengagement In The Applications And Not Seeking To Know More About Different Applications).	SS5_A_E	"I don't care about the icons it does not mean anything to me I just pretend it is just a random image" <i>"Translation has some problems to read but I got use it and ignore it"</i>
	SS6_A_E	<i>"Confusing and makes me hesitated to do actions?"</i>
	SS1_A_F	<i>" I don't use the location settings when posting on Facebook because it is not accurate"</i> <i>"Do not to add notes in 'Note pad' because I don't know how to use it"</i>
	SO1_E_M	<i>" I don't use most of the settings because the menus are too many"</i>

	SO2_E_M	“ I don’t change most of the settings and leave it as default due to complexity of the settings ” “ I do not share personal photos ”
	SS2_A_M	“ I do not know how to create groups events and pages ”
	SS1_A_F	“ I do not use most of the settings due to confusion of what they mean”
	SO2_E_M	“ I don’t know why people use the notes in Facebook”
	SS8_E_M	“ I am afraid to do any decision if the design of the interface is not clear. ”
Being Distorted In Arabic And Moved To English (Avoid Using Arabic Version)	SO3_E_M	“ The English version is designed better with their text that is why I use English version”
	SS1_A_F	“ The English version is designed better then the Arabic version,”
	SO2_E_M	“ Due to error of translation I prefer using the English version is better because the design is suited more in English text”,
	SS8_E_M	“ Issues in the translated version prevent me to use the Arabic version.”
	SO1_E_M	“ I prefer the English layout as it is more clear and easier to navigate.”
Being Distorted And Stop Using (Avoid Using The Facebook/Using Other Social Media)	SS2_A_M	“ Facebook is complicated to use as compared to twitter because it has less features to navigate.”
	SO1_M	“ I prefer using twitter to post comments or news.”
	SS9_A_F	“ If the layout and translation issues were designed better I would enjoy using Facebook more often and change the settings for privacy issues which is the reason why I don’t use it more often”
	SO6_A_F	“Twitter is designed much simpler where you tweet between users easily and there is no extra features that bothers the layout” “If the translation and layout improved maybe I will reconsider coming back to Facebook for socializing.”


Interview users behaviour

P	CONFUSION → BECAUSE OF WHAT?
SS3:	“ The text used in the Arabic version is confusing ”
SS1:	“ Misunderstand what the elements mean in the menus and settings page”

SO5:	“ The text used for news feed and menus makes hard to locate where things are”
SS6	“ <i>Wording in menus is confusing because placement of the Arabic words and English in the same sentence makes my navigation process hard to follow”.</i>
	“ <i>My eye start on the right therefore positioning the menus in the banner is better if it was on the right and prevents me to look for it.”</i>

C. Questionnaire one

The following are snapshot of the questionnaire one that was conducted in qualtrics website.


Facebook user interface design

Introduction

The aim of this survey is to explore Saudi's views and perspective in respect to the Arabic version of Facebook user interface. I would be most grateful if you would kindly spend 10-15 minutes to answer the following questions. All information collected will be kept in strict confidence for statistical purpose.

Please note that questions 8 to 15 provides you with snapshots of each page on Facebook to help you remember what that page looks like. Please select whether you agree or disagree from the elements referring to that page.

Participation is entirely voluntary - you are not under any obligation to participate and, if you do participate, you can withdraw at any time without giving any reason and without any consequences.

مقدمة

الهدف من هذه الدراسة هو معرفة وجهات نظر السعوديين فيما يتعلق بالنسخة العربية من واجهة المستخدم في الفيس بوك. وسأكون ممتنة بأن اخذ من وقتكم الثمين بضعة دقائق للإجابة على الاسئلة التالية ، علما بان جميع المعلومات هي تحت نظام حماية المعلومات ولن يتم استخدامها إلا للهدف من هذا البحث

فضلا قم باختيار التقييم الذي ترونه مناسباً لكل عنصر من عناصر واجهة المستخدم التالية

ملاحظة: في كل سؤال من الاسئلة تم ارفاق لقطة للشاشة لمساعدتكم على اعطاء التقييم الافضل المشاركة في هذا الاستبيان هي تطوعية ، والمشارك لا يخضع لاي شروط للمشاركة ، في حالة الرغبة في عدم اكمال هذا الاستبيان فلا يلزم المشارك بذكر اي اسباب عن عدم رغبته في اكمال الاستبيان ولا يخضعه ذلك لاي عقوبات

There is a chance to win £20 will be withdrawn from all participant who completes this survey.

[>>](#)

0% 100%

Survey Powered By [Qualtrics](#)

Q1. Please select the most appropriate:

معلومات شخصية

Gender الجنس		Age group الفئة العمرية			
male ذكر	Female أنثى	18-25	26-34	35-54	Over 54
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q2. What is your nationality? (Please select from the drop down list below)

فضلا اختر من القائمة التالية الجنسية التي تنتمي إليها:

Q3. Where do you live currently? (please select from the drop down list below)

فضلا أختار من القائمة التالية الدولة التي تعيش بها حاليا

Q4. Do you use Facebook?

هل تستخدم الفيس بوك؟

- Yes نعم
- No لا

<<

>>

0% 100%

Q5. Please select the most appropriate answer from the following questions regarding your Facebook use:

فضلا اختر الاجابة المناسبة لكل سؤال من الاسئلة الثلاثة التالية حول استخدامك للفييس بوك

How long have you been using Facebook? منذ متى Facebook؟ وأنت تستخدم الفييس بوك؟	How often do you open Facebook? كم مرة تقوم بفتح الفييس بوك؟	How often do you comment or post in Facebook? كم مرة تقوم بالتعليق أو نشر مادة أو مشاركة خاصة أو عامة عبر الفييس بوك؟
<p>Less than six months أقل من ست أشهر</p> <p>1-2 years سنة - سنتين</p> <p>3 years and over ثلاث سنوات فأكثر</p>	<p>Never أبدا</p> <p>less than once a month أقل من مرة في الشهر</p> <p>2-3 times a week مرتين أو ثلاث مرات في الأسبوع</p> <p>2-3 times a week مرتين أو ثلاث مرات في الأسبوع</p> <p>Daily يومية</p>	<p>Never أبدا</p> <p>less than once a month أقل من مرة في الشهر</p> <p>2-3 times a week مرتين أو ثلاث مرات في الشهر</p> <p>once a week مرة في الأسبوع</p> <p>2-3 times a week مرتين أو ثلاث مرات في الأسبوع</p> <p>Daily يومية</p>
<input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Q6. Please select the most appropriate answer from the following questions regarding to the arabic layout of Facebook?

فضلا اختر الاجابة المناسبة لكل سؤال من الاسئلة الأربع التالية حول تصميم واجهة الفييس بوك

What do you think of the overall design of the Arabic layout in Facebook compared to the English layout? ماهو أنطباعك العام حول تصميم الواجهة العربية من الفييس بوك؟	What do you think of the overall Colours scheme of Facebook? (Blue & white) ماهو أنطباعك العام لألوان الفييس بوك (الأبيض والأزرق)؟	What do you think of the overall navigation of Facebook? ماهو أنطباعك العام حول التنقل بين صفحات الفييس بوك؟	What do you think of the overall navigation design of Facebook setting? (ie. general, privacy and security setting) ماهو أنطباعك العام حول إعدادات الفييس بوك (الخصوصية وإعدادات الأمان)؟
<p>Like يعجبني</p> <p>Dislike لا يعجبني</p> <p>Never used it لم اتصفح من قبل</p>	<p>Like يعجبني</p> <p>Dislike لا يعجبني</p>	<p>Like يعجبني</p> <p>Dislike لا يعجبني</p>	<p>Like يعجبني</p> <p>Dislike لا يعجبني</p>
<input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/>

Q6a. If you disagree with any of the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على أي فقرة من فقرات السؤال السابق أو لديك تعليق تود اضافته ، فضلا اذكرها هنا

Q6a. If you disagree with any of the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على أي فقرة من فقرات السؤال السابق او لديك تعليق تود اضافته ، فضلا اذكرها هنا

Q7. Which page or part of Facebook layout do you remember the most? (ie. Home page, Profile page, Settings page etc...)

أي واجهه تصميم تتذكرها اكثر في الفيس بوك؟ (الصفحة الرئيسية ، صفحة الملف الشخصي ، صفحة الإعدادات.. إلخ

Q8. When surfing Facebook how would you describe your emotions overall.

ثناء تصفحك للفيس بوك ، ماهي افضل كلمات تصفح مشاعرك؟

- Surfing with excitement - تصفح بشوق
- Surfing with joy - تصفح باستمتاع
- Surfing with interest - تصفح باهتمام
- Other - غير ذلك

Q9. What language version of Facebook do you prefer to use?

ماهي اللغة التي تفضل استخدامها لواجهة الفيس بوك؟

- العربية
- الإنجليزية
- العربية والإنجليزية
- أخرى

<<

>>

Q10. News Feed:
صفحة اخر الاخبار

1 من الطلاب من Fahad Usman

تحديث الحالة إضافة صور/مقطع فيديو

بما تفكر؟

نشر

أضافت 2 صورتين جديدتين.




أعجبني · مشاركة · منذ 4 ساعات · 37 أشخاص معجبون بهذا.

الله روعة والله تسلمي
منذ منذ 4 ساعات عبر الهاتف المحمول · أعجبني

المدرسين لحد دلوقتى فاهمين ان الطرد من الحصه عقاب .

أعجبني · تعليق · مشاركة · أمس في الساعة 01:14 صباحاً · 63 أشخاص معجبون بهذا.

عرض 11 تعليقات إضافية

أعجبني · منذ 2
أمس في الساعة 11:47 صباحاً · أعجبني · 2

Móshakes-XjsbebyxOoyewxzs SUpErxbadxbøyz-xêlêctøorbøyzxs Shāl'êxêgnNêşx's-xOsopunksxosx XCÁrbøn-têámZ'zXpxxklpslikers
مش بعموم حاجه السراج

إعلان مُمول **Hurry, offer ends tomorrow**
Join Sky TV online & get a £100 credit on your bill. Learn how

العربية · الخصوصية · الشروط · ملفات تعريف الارتباطات · المزيد

Strongly Agree أوافق بشدة Agree موافق Disagree غير موافق Strongly disagree موافق بشدة

	Strongly Agree أوافق بشدة	Agree موافق	Disagree غير موافق	Strongly disagree موافق بشدة
Links highlighted in the red boxes used are relevant and easy to read. النصوص المحدد عليها باللون الاحمر سهلة القراءة والمتابعة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Posts that are displayed from friends or third party applicants is easy to follow. المشاركات المنشورة من قبل الاصدقاء أو اصديقاتهم سهلة المتابعة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10a. If you disagree with any of the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على أي فقرة من فقرات السؤال السابق أو لديك تعليق تود اضافته ، فضلاً اذكرها هنا

Q11. Profile page or Timeline
صفحة اليوميات



	Strongly Agree أوافق بشدة	Agree موافق	Disagree غير موافق	Strongly disagree موافق بشدة
Menus, links and tabs are clear and easy to follow. طريقة عرض القوائم والروابط في الصفحة سهلة المتابعة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11a. If you disagree with the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على فقرة سؤال السابق أو لديك تعليق تود اضافته ، فضلاً اذكرها هنا

Q12. Icons menu:

ايقونات القوائم في صفحة اخر الاخبار

المفضلات

- أهلاً بك 
- آخر الأخبار 
- الرسائل 
- المناسبات 
- الصور 
- البحث عن أصدقاء 

الأصدقاء

- الأصدقاء المقربون 
- العائلة 

التطبيقات

- مركز التطبيقات 
- نشاط الألعاب 
- موسيقى 
- الملاحظات 
- الروابط 
- التكرات 

المجموعات

- إنشاء مجموعة... 

الصفحات

- اكتشاف الصفحات 

الاهتمامات

- متابعة 
- إضافة اهتمامات... 

مرشحات البحث

- كل النتائج 
- أشخاص 
- الصفحات 
- أماكن 
- المجموعات 
- التطبيقات 
- المناسبات 
- الموسيقى 
- نتائج ويب 
- منشورات الأصدقاء 
- منشورات عامة 
- Posts in Groups 

	Strongly Agree أوافق بشدة	Agree موافق	Disagree غير موافق	Strongly disagree غير موافق بشدة
Images used for icons are relevant. الصور المستخدمة للايقونات مناسبة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Icons are relevant to the text. الايقونات متناسبة مع النص التعريفي لها	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12a. If you disagree with any of the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على أي فقرة من فقرات السؤال السابق او لديك تعليق تود اضافته ، فضلا اذكرها هنا

Q13. Status Update within the input box:

تحديث الحالة في مربع الإدخال

	Strongly Agree أوافق بشدة	Agree موافق	Disagree غير موافق	Strongly disagree غير موافق بشدة
Easy to understand what each icon represents in the red box. من السهل فهم ماتمثلة كل ايقونة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q13a. If you disagree with the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على فقرة سؤال السابق او لديك تعليق تود اضافته ، فضلا اذكرها هنا

Q14. Privacy Settings:
إعدادات صفحة الخصوصية

إعدادات الخصوصية وأدواتها			
تعدّل	أنا فقط	من يستطيع رؤية منشوراتك المفضلة؟	من يستطيع رؤية محتواي؟
تعدّل	استخدام سجل النشاطات	مراجعة كل منشوراتك والمحتوى الذي تم الإشارة إليك فيه	
تعدّل	تحديد المنشورات السابقة	هل ترغب بتحديد الجمهور للمنشورات التي شاركتها مع أصدقاء الأصدقاء أو العامة؟	
تعدّل	أصدقاء الأصدقاء	من يستطيع إرسال طلبات صداقة إليك؟	من يستطيع الاتصال بي؟
تعدّل	نصبة أساسية	رسائل من أرباب تصفيتها إلى بريدي الوارد؟	
تعدّل	الأصدقاء	من يستطيع البحث عنك بواسطة عنوان البريد الإلكتروني الذي قمت به؟	من يستطيع البحث عنّي؟
تعدّل	الأصدقاء	من يستطيع البحث عنك بواسطة رقم الهاتف الذي قمت به؟	
تعدّل	إيقاف التنشيط	هل ترغب أن تقوم بحركات بحث أخرى بالربط بيوميانك؟	

	Strongly Agree أوافق بشدة	Agree موافق	Disagree غير موافق	Strongly disagree غير موافق بشدة
Text content is understandable. محتوى النصّ سهل الفهم	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Navigation process is easy to follow. عملية التصفح سهلة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q14a. If you disagree with any of the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على أي فقرة من فقرات السؤال السابق أو لديك تعليق تود إضافته ، فضلاً اذكرها هنا

Q15. Blocking Settings:

إعدادات صفحة إدارة الحظر

إدارة الحظر

قائمة المحظورين

عندما تضيف أصدقاء إلى قائمة المقيدين، يستطیع هؤلاء فقط رؤية المعلومات والمنشورات المتاحة للعامّة. لا یعلم فیس بوك أصدفانك عندما تضيفهم إلى قائمة المقيدین لديك.

حظر المستخدمين

عند حظر أحدهم، لن ینمكن هذا الشخص من رؤية المحتوى الذي تنشره فی يومیارك أو الإشارة إليك أو دعوتك إلى مناسبات أو مجموعات أو بدء معادنة معك أو إضافتك كصديق. ملاحظة: لا یشمل هذا التطبيقات أو الألعاب أو المجموعات التي تشاركك فيها.

حظر المستخدمين: إضافة اسم أو بريد إلكتروني

حظر دعوات التطبيقات

لذي حظر دعوات التطبيقات من أحدهم، تجاهل تلقائياً الدعوات المستقبلیة إلى التطبيقات من ذاك الصديق. لحظر الدعوات من صديق محدد، اضغط الرابط "تجاهل كل الدعوات من هذا الصديق" أسفل الطلب الأحدث.

حظر الدعوات من: اكتب اسم صديق...

حظر الدعوات من المناسبات

عندما تقوم بحظر دعوات المناسبات من أحد ما، تجاهل تلقائياً أي طلبات مستقبلية لمناسبات من ذاك الصديق.

حظر الدعوات من: اكتب اسم صديق...

	Strongly Agree أوافق بشدة	Agree موافق	Disagree غير موافق	Strongly disagree موافق بشدة
Satisfied with the font size used for the text . حجم الخط للنص مرضي جدا .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Satisfied with the font style used for the text . نوع الخط المستخدم للنص مرضي جدا .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15a. If you disagree with any of the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على أي فقرة من فقرات السؤال السابق أو لديك تعليق تود إضافته ، فضلاً أذكرها هنا

Q16. Notification Settings:
إعدادات صفحة اليوميات والإشارة

إعدادات اليوميات والإشارة

تعديل	الأصدقاء	من يمكنه النشر على التسلسل الزمني للأحداث الخاص بك؟	من يستطيع إضافة محتوى إلى يومياتي؟
تعديل	إيقاف التشغيل	هل ترغب بمراجعة المنشورات التي يشير إليك فيها أصدقاؤك قبل ظهورها في يومياتك؟	من يستطيع رؤية المحتويات في يومياتي؟
عرض ك		مراجعة ما يراه الآخرون في يومياتك	
تعديل	أصدقاء الأصدقاء	من يستطيع رؤية منشورات تمت الإشارة إليك فيها في يومياتك؟	من يستطيع رؤية المنشورات التي يضيفها الآخرون إلى منشوراتك قبل ظهورها في فيس بوك؟
تعديل	أصدقاء الأصدقاء	من يستطيع رؤية ما ينشره الآخرون في يومياتك؟	كيف يمكنني إدارة الإشارات التي يضيفها الأشخاص واقتراحات الإشارات؟
تعديل	إيقاف التشغيل	هل ترغب بمراجعة الإشارات التي يضيفها الآخرون إلى منشوراتك قبل ظهورها في فيس بوك؟	عندما تم الإشارة إليك في منشور، من ترغب بإضافته إلى الجمهور ممن لم تتم إضافته بعد؟
تعديل	الأصدقاء	عندما تم الإشارة إليك في منشور، من ترغب بإضافته إلى الجمهور ممن لم تتم إضافته بعد؟	من يرى اقتراحات الإشارة عندما يتم تحميل صور تشبهك؟ (هذه الميزة غير متوفرة لديك بعد)
	عمر متوفر	عمر متوفر	

	Strongly Agree أوافق بشدة	Agree موافق	Disagree غير موافق	Strongly disagree موافق بشدة
Position on the text displayed on the page is easy to follow. ترتيب مواقع النصوص سهلة التصفح	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q16a. If you disagree with the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على فقرة سؤال السابق أو لديك تعليق تود إضافته ، فضلاً اذكرها هنا

Q17. Advertisement settings:
إعدادات الاعلانات في فيس بوك

إعداد اعلان

الإعلان على فيس بوك

أكثر من مليار شخص. سنساعدك على الوصول إلى الأشخاص المناسبين.

أو اتصل بفريق المبيعات لدينا

الخطوة الثالثة:
مشاركة المحتوى الجيد

انشر التحديثات التي تتميز بالجودة وهم سويج منشوراتك بالإعلانات لإشراك عملائك وأصدقائهم. أيضاً الآن.

الخطوة الثانية:
التواصل مع الأشخاص

اجعل الأشخاص يتصلون بمحتواهم بصفتك. قم بإنشاء العديد من الإعلانات والاستهداف حسب الموقع، والتوزيع الديموغرافي والأهتمامات.

الخطوة الأولى:
إنشاء صفحتك على فيس بوك

كل شعبه على فيس بوك يبدأ بصفتك. إنشاء صفحة. إنها طريقة بسيطة ومجانية للتواصل مع العملاء.

نظرة عامة

طريقة العمل

النجاحات

.State Bicycle Co
Luxury Link

أبرز الأسئله

هل أنت جديد على الإعلان على فيس بوك؟ تعرف على المزيد حول كيفية عملها.

احصل على أحدث التحديثات والتلميحات. مثل صفحة تسويق فيس بوك.

لديك بالفعل حساب إعلانات على فيس بوك؟ قم بتسجيل الدخول لإدارة الإعلانات الحالية.

1,248,340 إعجاب • 1,248,340 تفاعل • 1,248,340 منصفتهك

	Strongly Agree أوافق بشدة	Agree موافق	Disagree غير موافق	Strongly disagree غير موافق بشدة
The way the information are displayed on the page are clear and easy to follow. طريقة عرض القوائم والروابط في الصفحة سهلة المتابعة	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q17a. If you disagree with the above or have any other comments you would like to add please indicated it below.

إذا كنت لا توافق على فقرة سؤال السابق او لديك تعليق تود اضافته ، فضلاً اذكرها هنا

The following table demonstrates the design element and the general attitude between Saudis living in Saudi and Saudi living outside Saudi.

Aspect	General Attitude	Significant Differences between groups
Icons	<ul style="list-style-type: none"> • Irrelevant • Confusing • Hard to navigate 	Saudis who are living in Saudi are significantly more likely to perceive a lack of relevance between the images and the functionality of the icon.
Layout design and Navigation	<ul style="list-style-type: none"> • Confusion • Hard to navigate 	Saudis living outside Saudi Arabia may have slightly higher expectations of the Arabic user interface than Saudis living in Saudi Arabia.
English and Arabic version of face book	<ul style="list-style-type: none"> • Menus and translation of the Arabic does not make sense • Due to Arabic translation prefer using English version is suited better with the design • Will use the Arabic version if the translation were fixed 	Saudis living outside Saudi Arabia prefer the English version more than Saudis living in Saudi Arabia, but regardless of the language they use when interacting with Facebook the overwhelming majority of participants have found that the English version is better because the design elements are better suited to the English text.
Alignment of text	<ul style="list-style-type: none"> • Complicated to read and follow. • The alignment and mix of languages (sometimes on the right and sometimes on the left) makes it confusing 	Saudis living in Saudi Arabia dislike the positioning of the text displayed in the Settings page more than Saudi living outside Saudi Arabia.
Arabic translation	<ul style="list-style-type: none"> • Confusing • Misunderstanding • Complicate to read • Hard to understand 	Saudis who live in Saudi Arabia are more likely to be strict about the correct translation of the Arabic language than those living outside Saudi Arabia

Statistics of questionnaire one

t-test for Equality of Means

	t	df	Sig. (2-tailed)	Mean Difference	<i>Std. Error Difference</i>
<i>Positioning of News Feed</i>	7.271	170.516	<.001	.745	.102

t-test for Equality of Means


	T	Df	Sig. (2-tailed)	Mean Difference	<i>Std. Error Difference</i>
Language version preference	2.919	195.415	.004	.158	.054

t-test for Equality of Means

	T	Df	Sig. (2-tailed)	<i>Mean Difference</i>
Text in settings page	4.459	165.809	.000	.446

D. Questionnaire two

The following questionnaire is a snapshot of the questionnaire design that was conducted in questionnaire two.



Introduction

The aim of this survey is to explore the Saudi's views and perspective with respect to the Arabic version of the Facebook user interface. This research evaluates Saudi Arabian culture and considers how Saudi interacts with Facebook's interface application.

I would be most grateful if you would kindly spend few minutes to answer the following questions. All information collected will be kept in strict confidence for statistical purpose.

Participation is entirely voluntary - you are not under any obligation to participate and, if you do participate, you can withdraw at any time without giving any reason and without any consequences and the data will be destroyed.

Also, all participants who complete this survey will be entered into a free draw for a chance to win £20 from Amazon.

مقدمة

الهدف من هذه الدراسة هو معرفة وجهات نظر السعوديين فيما يتعلق بالنسخة العربية من واجهة المستخدم في الفيس بوك. وسأكون ممتنة بأن اخذ من وقتكم الثمين بضعة دقائق للجابة على الاسئلة التالية ، علما بان جميع المعلومات هي تحت نظام حماية المعلومات ولن يتم استخدامها إلا للهدف من هذا البحث

فضلا قم باختيار التقييم الذي ترونه مناسباً لكل عنصر من عناصر واجهة المستخدم التالية

ملاحظة: في كل سؤال من الاسئلة تم ارفاق لقطة للشاشة لمساعدتكم على اعطاء التقييم الافضل المشاركة في هذا الاستبيان هي تطوعية ، والمشارك لا يخضع لاي شروط للمشاركة ، في حالة الرغبة في عدم اكمال هذا الاستبيان فلا يلزم المشارك بذكر اي اسباب عن عدم رغبته في اكمال الاستبيان ولا يخضعه ذلك لاي عقوبات

ايضاً جميع المشاركين في الاستبيان سيدخلون في سحب على هديه رمزية (قسيمة شراء) بقيمة ٢٠ جنيه استرليني من موقع أمزون

>>



1- Please select your gender:

فضلا اختر جنسك:

- Male - ذكر
- Female - أنثى

2- Please select your age group:

فضلا اختر فئتك العمرية:

- 18- 25
- 26-34
- 35-54
- over 54

5- How would you rate your IT skills?

ماهو تقييمك لمهاراتك في تقنية المعلوماتك ؟

Not very good ليست جيدة

Very good جيدة للغاية

	1	2	3	4	5
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6- How would you rate your Facebook surfing experience?

كيف تقيم تجربتك لتصفح الفيس بوك؟

	ليست جيدة لغير			جيدة للغاية
	1	2	3	4
تغيير الاعدادات - Changing settings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
إنشاء الصفحات ، المجموعات - Creating pages, groups and events والاحداث	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
الإعلانات - Advertising	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
البحث عن أصدقاء جدد - Searching for a new friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
مشاركة الصور ، الفيديو والايثار - Sharing photo's, video's and News	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
استخدام الهاشتاق - Hashtagging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7- How long have you been using Facebook?

منذ متى وانت تستخدم الفيس بوك؟

- أقل من سنة - Less than a year
- سنوات 2-3 - 2-3 years
- أكثر من 4 سنوات - Over 4 years

8- Which language version do you prefer using in Facebook?

ماهي لغة واجهه المستخدم التي تفضل استخدامها في الفيس بوك؟

	دائما Always	أحيانا Sometime	أبدا Never
العربية - Arabic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
الإنجليزية - English	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
أخرى - Others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9- Which device do you prefer using in Facebook?

ماهو الجهاز الذي تفضل استخدامه لتصفح الفيس بوك؟

	Always دائما	Sometimes أحيانا	Never أبدا
Computer - الكمبيوتر	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile - الجوال	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ipad - الاي باد	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10- From the list below, please rate how often you use Facebook for:

من القائمة التالية ، فضلا قم باختيار افضل خيار يمثل استخدامك للفيس بوك؟

	Always دائما	sometimes أحيانا	Never أبدا
Finding new friends - للبحث عن اصدقاء جدد	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exchanging messages - تبادل الرسائل	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sharing personal photos - مشاركة الصور الشخصية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sharing news - مشاركة الاخبار	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sharing comments - مشاركة التعليقات	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating groups and pages - إنشاء المجموعات والصفحات	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advertising product and/or services / الإعلان عن المنتجات و الخدمات	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11- Please select true or false from the following statement.

فضل قم باختيار صح او خطأ للجايه الاتسب لكم حول النقاط التالية؟

	True - صح	False - خطأ
It is hard to remember where things are in the settings page, unless I start navigating through them. من الصعب تذكر أماكن الأشياء في صفحة الإعدادات ، إلا في حالة تصفحي لهم	<input type="radio"/>	<input type="radio"/>
Text content is hard to understand due to the translation issues من الصعب فهم محتوى النصوص لوجود مشاكل في الترجمة	<input type="radio"/>	<input type="radio"/>

12- How would you prefer the settings page to be designed as? (You may choose more than one answer)
كيف تفضل ان يتم تصميم صفحة الاعدادات؟ (يمكنك اختيار أكثر من إجابة واحدة)

- Group menu by relationship عمل القوائم في مجموعات ذات صلة
- Less text to represent each setting تقليل النصوص التي تمثل كل قائمة
- Represent information with icons عن طريق عناوين وايقونات معا

13- How would you like the layout of the settings to be designed as?
كيف تود ان يكون تقسيم وتصميم صفحة الاعدادات؟

- Horizontally أفقيا
- Vertically عموديا
- Do not know لا أعرف

14- Please rate the following questions on a rating scale from 1-strongly agree to 5 strongly disagree.
فضلا قم بتقييم الاسئلة التالية ، حيث ان 1 تعني أنك تتفق بشده و 5 تعني بانك تعارض بشده

	Strongly agree أوافق بشده 1	2	3	Strongly disagree لا أوافق بشده 4
I prefer limited options to choose from when I navigate through the settings page. أفضل وجود خيارات محدوده للاختيار منها عند تصفحي لصفحة الاعدادات	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer the icon images to relate more to my understanding. أنا أفضل أيقونة الصور أن تصل أكثر لفهمي	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15- Have you had any experience where you thought an icon as something but subsequently, it turned out to be something else?
من خلال استخدامك للبيس بوك هل سبق وان رأيت أيقونه وضننتها تعني شيئا ثم ظهرت على انها شيء آخر؟

- Yes, it often happens to me - نعم ، غالبا ما يحدث لي هذا الامر-
- Yes, it happened to me a few times - نعم ، حدث معي ذلك عدة مرات -
- No, it has never happened with me - لا، لم يحدث معي -

16- The following are icons used in Facebook. Please click once on each icon if you think is relevant to the text (green) and click twice on those you think it's not (red). (Please make sure you click on each item)

الايقونات التالية هي مستخدمة حاليا في الفيس بوك. فضلا قم بالضغط مره واحده على الايقونات التي تعتقد انها تد على النص المقابل لها وستتحول للون الاخضر، او اضغط مرتين على الايقونات التي لا تعتقد بانها تمثل النص المقابل لها وستتحول للون الاحمر (فضلا تاكد من ان تقوم بالضغط على جميع الايقونات)



18- The following is a snapshot picture of the settings page that has different columns. Please click once on the areas or columns you like (green) or click twice if you do not like or you prefer it to be designed differently (red).
 فضلاً قم بالضغط مره واحدة على القوائم التي تعجبك (اخضر) ، ومرتين على القوائم التي لا تعجبك في الصورة التالية (احمر)



19- Please list below what other features you dislike in the Arabic version of Facebook user interface design, or you would like to be added?

فضلاً قم بذكر أي معلومات لا تعجبك حول تصميم الواجهة العربي للفييس بوك؟

Please enter your name and email address for your chance to win a £20 voucher from Amazon.
 فضلاً ادخل اسمك وبريدك الإلكتروني للدخول في المسحب على قسيمة شراء بقيمة ٢٠ جنيه استرليني من موقع امزون



Statistics of questionnaire two

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.812 ^a	.659	.656	.436

a. Predictors: (Constant), Q. Perfer the icons image to relate to my understanding to help navigate better.

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.321	1	58.321	306.663	.000 ^b
	Residual	30.238	159	.190		
	Total	88.559	160			

a. Dependent Variable: Q. Have you had any experience where you thought an icon as something but subsequently, it turned out to be something else?

b. Predictors: (Constant), Q. Perfer the icons image to relate to my understanding to help navigate better.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.518	.078		6.633	.000
	Q. Perfer the icons image to relate to my understanding to help navigate better.	.727	.041	.812	17.512	.000

a. Dependent Variable: Q. Have you had any experience where you thought an icon as something but subsequently, it turned out to be something else?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.467 ^a	.218	.213	.803

a. Predictors: (Constant), Q. Perfer less text in settings page?

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.516	1	28.516	44.227	.000 ^b
	Residual	102.515	159	.645		
	Total	131.031	160			

a. Dependent Variable: Q. Less menu options in the settings page would help navigate through the settings page and prevent confusion?

b. Predictors: (Constant), Q. Perfer less text in settings page?

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.739	.173		4.279	.000
	Q. Perfer less text in settings page?	.768	.115	.467	6.650	.000

a. Dependent Variable: Q. Less menu options in the settings page would help navigate through the settings page and prevent confusion?

Users who use the web, phone and ipad

Correlations

Statistics Pearson Correlation

	Web,phon,ipad	Page feed icon	Like pages icon	Games icon	photo icon	Page feed icon	General page icon	Security icon	Privacy icon	Blocking icon	Notification icon	Mobile icon	Followers icon
Web,phon,ipad	1	-.074	-.029	.012	.081	.108	-.028	.130	.215**	-.180	.228**	.440**	.204**
Page feed icon	-.074	1	.256**	.197	.156*	.022	.053	.079	.065	.027	.206**	.131	-.070
Like pages icon	-.029	.256**	1	.540**	.485**	-.070	-.023	-.010	-.024	-.089	.052	.012	-.025
Games icon	.012	.197*	.540**	1	.785**	-.014	-.032	.051	.044	-.137	.192*	.040	.018
photo icon	.081	.156*	.485**	.785**	1	.053	.058	.096	.086	-.044	.132	.031	.076
Page feed icon	.108	.022	-.070	-.014	.053	1	.122	.433**	.379**	.098	.369**	.165**	-.076
General page icon	-.028	.053	-.023	-.032	.058	.122	1	.523**	.408**	.356**	.069	.245**	-.032
Security icon	.130	.079	-.010	.051	.096	.433**	.523**	1	.826**	.536**	.446**	.484**	-.046
Privacy icon	.215**	.065	-.024	.044	.086	.379**	.408**	.826**	1	.427**	.531**	.482**	.047
Blocking icon	-.180*	.027	-.089	-.137	-.044	.098	.356**	.536**	.427**	1	.245**	.347**	.004
Notification icon	.228**	.206**	.052	-.192*	.132	.369**	.069	.446**	.531**	.245**	1	.356**	-.032
Mobile icon	.440**	.131	.012	.040	.031	-.165*	.245**	.484**	.482**	.347**	.356**	1	.252**
Followers icon	.204**	-.070	-.025	.018	.076	.076	-.032	-.046	.047	.004	-.032	.252**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Users who prefer web, phone, ipad is the same as users who prefer less menu separation of text and images with settings:

	prefer separation of menus in settings page	Web,phon,ipad	Q. Prefer less text in settings page?	Prefer less context in settings page	Prefer images in settings menu
prefer separation of menus in settings page	1	.160*	-.061	.138	-.049
Web,phon,ipad	.160*	1	.110	-.012	-.158*
Q. Prefer less text in settings page?	-.061	.110	1	-.126	-.038
Prefer less context in settings page	.138	-.012	-.126	1	.137
Prefer images in settings menu	-.049	-.158*	-.038	.137	1

*. Correlation is significant at the 0.05 level (2-tailed).

Relationship between experience of settings and preferences of position of the settings

	rate-Changing settings	Q. How do you prefer the position of settings page to be designed as?
rate-Changing settings	1	-.074
Q. How do you prefer the position of settings page to be designed as?	-.074	1

Language preferences relationship- Appearance of settings

Correlations

		Navigation of news feedis easy to follow?	Q. Perfer less text in settings page?	Language perfernce
Navigation of news feedis easy to follow?	Pearson Correlation	1	.075	-.001
	Sig. (2-tailed)		.346	.992
	N	161	161	161
Q. Perfer less text in settings page?	Pearson Correlation	.075	1	-.028
	Sig. (2-tailed)	.346		.724
	N	161	161	161
Language perfernce	Pearson Correlation	-.001	-.028	1
	Sig. (2-tailed)	.992	.724	
	N	161	161	161

Correlations

Pearson Correlation

	Q. Less menue options in the settings page would help navigate through the settings page and prevent confusion?	Q. Perfer the icons image to relate to my understanding to help navigate better.
Q. Less menue options in the settings page would help navigate through the settings page and prevent confusion?	1	.926**
Q. Perfer the icons image to relate to my understanding to help navigate better.	.926**	1

** . Correlation is significant at the 0.01 level (2-tailed).

	rate- Changing settings	rate- Changing settings	rate-creating pages, groups and events	rate- Advertising	rate- Sharing photos, videos and News feed	rate- Sharing photos, videos and News feed	Q. Perfer the icons image to relate to my understandin g to help navigate better.	Q. Less menue options in the settings page would help navigate through the settings page and prevent confusion?
rate-Changing settings	1	.060	.017	.106	.203**	-.046	.029	.022
rate- Changing settings	.060	1	.113	.034	.032	-.111	-.036	-.023
rate-creating pages, groups and events	.017	.113	1	.034	-.075	-.104	-.156*	-.123
rate-Advertising	.106	.034	.034	1	.264**	.139	.227**	.282**
rate- Sharing photos, videos and News feed	.203**	.032	-.075	.264**	1	.330**	-.037	-.057
rate- Sharing photos, videos and News feed	-.046	-.111	-.104	.139	.330**	1	.018	.011
Q. Perfer the icons image to relate to my understanding to help navigate better.	.029	-.036	-.156*	.227**	-.037	.018	1	.926**
Q. Less menue options in the settings page would help navigate through the settings page and prevent confusion?	.022	-.023	-.123	.282**	-.057	.011	.926**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Differences between users who use web , phone and ipad and positioning of settings

Correlations

		Web	mobile	ipad	Q. How do you perfer the postion of settings page to be designed as?
Web	Pearson Correlation	1	.153	-.055	.012
	Sig. (2-tailed)		.054	.486	.880
	N	161	160	160	161
mobile	Pearson Correlation	.153	1	-.066	.014
	Sig. (2-tailed)	.054		.406	.861
	N	160	160	159	160
ipad	Pearson Correlation	-.055	-.066	1	.136
	Sig. (2-tailed)	.486	.406		.085
	N	160	159	160	160
Q. How do you perfer the postion of settings page to be designed as?	Pearson Correlation	.012	.014	.136	1
	Sig. (2-tailed)	.880	.861	.085	
	N	161	160	160	161

E. Focus group

The following are the Questions that were discussed in the focus group.

Icons

- Please Mix and match each icons with the labeling. Afterwards, we will discuss the each icon in details on whether or not it a better design then the existing icons.
- Do you think placing an avatar image as the icon help represent the content or elements better?
- Do you think placing labeling with more then one word with explanation of the icon function help with the understanding of the icon? Or do you prefer something else?

General and privacy settings

- Do you think displaying an example image helps you understand what each settings represent?
- Do you prefer drop down menu instead of links?
- Do think summarizing the text in the settings to simple precise words instead of too many explanations makes it easier for you to navigate?
- Do you like the layout to be designed vertical instead of horizontal?

Subheading

- Do you think Redesigning the page by placing a border around each setting allows you to focus more on the Arabic content?
- Do you think of the newer version has is better translated?
- Do you like the better version where everything is written in Arabic instead of a mixture of Arabic and English?

Banner

- Do you like how the menus and links are designed to the right side of the banner so it read better with the Arabic text (right to left).

Timeline posts

- What do you think of the translated text is better then the old version?

Dates and Time

- Dates used in facebook is not correct they should use the islamic calender because that is what is used in saudi arabia. What do you think?
- The time (minutes and hours) is not correct and should be translated correctly to prevent confusion. What do you think?