A Study on UI Design of Social Networking Service Messenger by Using Case Analysis Model

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Abstract

The visual presentation is one key feature which gives much consideration in designing mobile applications as it acquires attention from the end user. It takes only a few milliseconds to form an impression on a person and this is not any different to the web and mobile application designs. The first few milliseconds are a crucial time for developers as the impression produced would indicate further engagement of the service. Developers should continuously update the designs based on human needs. A few of these contents have actually paved its way to being continuously used. By synthesizing results of preceding researchers, this paper considers layout, color, and font as UI design elements of SNS messenger, and illustration and animation as the graphic image of it. In this study, the preference for messaging application chat layout was being surveyed and analyzed. As a result, there has been little significance identified since the instant messaging, so chat layout shows very minimal variance in their design.

Index Terms: Case analysis, Design, Messenger, Social networking service, User interface

I. INTRODUCTION

There are a lot of factors to create actual UI design such as color combination, fonts, coherency of layout, etc. Furthermore, there is some digital expression to present for users in function wise to communicate easily and conveniently.

Instant messaging (IM) is a type of social media which is also an internet-based communication medium application that is developed to provide convenient, immediate, communication between participants. This type of platform allows user to perform variety of tasks. The theorists say that a media user seeks out a media source that best fulfills the needs of the user. Since these contents possess status feature, which indicates availability of the other participant, it allows the user to know when it is possible to communicate with another participant. It may be real-time or off-line message. Other features include customizable backgrounds, availability of emoticons, and GIF to express the mood of the sender, profile picture which serves as a self-presentation, location indicators, etc. However, all of these communication mediums may be not successful in attracting users to be engaged continuously. As quoted in a study [1], the theory of uses and gratification assumes that users take an active part in the communication process and are goal oriented in their media use. It aims to explain what social or psychological needs motivate people to engage in a variety of media use behaviors [2]. Another point that has

taken consideration in the engagement of the content is aesthetics and as the saying goes "First impression counts". The first impression of web pages is as little as 50 ms (1/20th of a second) according to Canadian researchers. In the blink of an eye, web-surfers make nearly instantaneous judgments of a web site's visual appeal. Through the "halo effect" first impressions can color subsequent judgments of perceived credibility, usability, and ultimately influence our purchasing decisions [3]. There are more theories and principles applied in creating a visually appealing content. The golden section and dynamic symmetry provides a visually comfortable effect to human eyes and a natural sense of order and also a balance and ease for users to improve the usability. A well-structured window must also possess affordance, as this theory deals with the visual elements of the page. It tells users what the objectives of the elements are and how they should be utilized. Furthermore, affordance of the elements should be according to their functionality because poor affordance leads to the misinterpretation of actions and functionality and results in inaccurate actions which affect the effectiveness of interface. Another theory that deals with elements is Gestalts Law which provides a clean and well-organized effect of elements on interface to easily find information and accomplish the task. And lastly there was a result that color theories give good visual effect and harmony to the users [4].

The whole visual design is not only focused on evoking first impressions on users but also to facilitate exploration with fun, ease, and comprehensibility on the content that would lead to further and successful engagement providing the needs of users online.

With the tough competition among the many instant messaging applications available in store, only a few have consistently used by the people. As this study wants to look into the layout design and features available of the content by using case analysis model which can be one factor that affects to the users to continually use. Features itself is the user interface, as they are involved in the interaction between the user and content. And these features hold different functions that would enable a user to navigate the software and by navigating, aids the user to achieve the desired outcome.

II. BACKGROUND

A. UI Design Elements

Users generally experience two kinds of interactions in the use of SNS messenger service. The first category of the interactions is that between user and computer, User-Computer interaction, and the second is the communication between the user and the other user, User-User interaction.

Table 1. UI graphic design elements of the previous researches

Author	UI design element
Kang and Kim [5]	UI Design Guide
Sridevi [6]	Layout, Icon, Color, Text, Button, Video
Fu [10]	Layout, Color, Icon, Button, Font
Peer et al. [12]	Layout, Color, Navigation, Graphic elements, Animation & Video

For the user's convenience of experiencing the two classes of interactions efficiently, appropriate design of messenger UI is to be considered. At first in the User-Computer interaction, user-oriented design providing the convenience to the users is important, and also the use of visual elements in overall operations which enables intuitive, familiar approaches in perspectives of the users is desirable [5].

In the User-User communication, interfaces that employ not just text but also graphic elements such as icons and diagrams have to be used for the fluent communication and intuitive, entertaining conversation [6]. Thus, preceding researchers' opinions on major UI design elements in order to foster these environments are showed in Table 1.

Synthesizing opinions of preceding researchers, this research considers layout, color, and font as UI design elements of SNS messenger, and illustration and animation as the graphic image of it. The layout is the element that effectively organizes the contents of information in the limited screen maximizing the effects of conveyance [7], and it is classified into a free format which employs the unformatted naturalness and aesthetic elements, and grid form which enables to make objective, stable, and sleek outputs more conveniently [8]. For messenger where intuition for smooth communication is considered as important, grid form with stability is desirable. Color transmits the image which is aimed to be expressed effectively and is a good means to have the users recall the brand [9]. Therefore, coherent use of the colors is recommended for the symbolic concept of the messenger, but at the same time, the distinction in the emphasized part of the interface is to be employed as the factors to prevent users from being confused. A font is designed with the size proportional to other elements, devised in the style in accordance with overall ambience, and applied in regard to arrangement, colors, and space between letters and lines in order for effective delivery of information [10]. The Gothic font is generally appropriate to short sentences finished with nouns, and the Ming-style font is proper to text [7]. Due to the messenger's character of the communication with short sentences, the Gothic font, without the serif, is considered to be useful. In sequence, an image is complex design elements with nonliteral form, employed to illustrate a real appearance of either actual world or created world directly [11]. In messenger, the image works as a transmitter of

various emotions, and so on, avoiding boredom and using illustration and animation in the communication of text messages. Illustration, recognized as communication art in accordance with the situation and purpose, is an abstract of an image, and animation shows mobility and vividness with several frames together, attracting users and stimulating their imagination [12]. Thus messengers recently are inclined to provide the functions previously mentioned via the emoticons with illustration and moving animation.

With the observation on the preceding researches, UI design elements in SNS messengers were examined, and this research is to analyze the cases in terms of layout, color, font, and image. Therefore the current issues and problems are to be identified through the theoretical background and the result of the case study, and the appropriate design to the concept and the characteristics of the messenger should be provided.

B. The Cluster Core Needs

The increased use of technology has facilitated the boom of social networking service consumption, especially chat based contents. These applications are basically used for communication. As the demand for real-time communication is heightened, the evolution of additional features for more interactions rises as well. The development of the designs was based on the end users' needs and giving consumers beyond their expectations. Based on the chat layout design of the Facebook, Viber, Skype, KakaoTalk and Line, they display similarities in their designs which can be attitudes in defining user's core needs that are catered in these applications. Features provided in the application help users navigate the outcome they want to achieve.

There are several functions that we should consider in IM services. These consist of communication, relationship, sharing, identity and presence. Among them communication is the most popular use of the mobile social networking services. There are several communication technologies used such as e-mail, chatting and etc. These are unique to networked computer environments and have come into wide popularity because of the Internet. Other technologies, including video and audio conferences and Internet telephony, are also available on the mobile social networking services. Communication is the need in which instant messaging applications are primarily designed to facilitate conversations for different reasons. Basically, it allows transmitting real-time text messages instantly, character-by-character. As quoted in the previous study, IM is a type of very popular and common communication services via the internet to enable people to create a private or group chat space [13]. Moreover, people use chat applications as medium to stay connected with their families and friends when they are residing overseas. IM protocols are kept in the conversation-window

until it is closed and may be saved or copied. Users may choose to automatically save all chat logs for future consumption. In this way, IM has redefined memory as networked rather than personal [14]. For IM users, functions and convenience are considered the most important factors in determining their usage. As a channel of online/virtual communication, IM has been found very useful in the situations when it's not convenient or comfortable to talk face-to-face. IM interactions are more like informal face-to-face communication—being simple, brief, spontaneous, and rich in context. The ability of IM to support synchronous communication in distributed settings makes its communication environment very attractive [15]. IM allows users to communicate without paying long distance fees to maintain long-distance relationships [16].

People can also communicate to convey ideas or relate with others. By 'relate' we mean that two or more users have some form of association that leads them to converse, share objects of sociality, meet up, or simply just list each other as a friend. A 'buddy-list', the user's list of contacts, is often embedded in IM clients to facilitate interpersonal communication, with which the user can easily initiate a conversation with others by sending text messages or other multimedia channels [17]. As Schwarz [14] claims that a large part of interpersonal interaction has recently been relocated to IM clients. People may enhance their interpersonal communication by using IM, leading to an increase in satisfaction with their social relationships in the virtual world. Lin et al. [16] suggested that the use of IM as a communication channel induces a positive mediation effect, such as mood sharing, expressing thoughts, being cared for, and mutual understanding, leading directly to the individual interpersonal relationship. The increase in users' satisfaction with their virtual interpersonal relationships has a positive effect on their interpersonal relationships in real life.

III. PROPOSED CASE ANALYSIS MODEL

Interaction refers to how the user interacts with the device and to what extent the device is or is not developed for successful interaction with the users. In interaction design, as what was mentioned, it focuses on creating engaging interfaces with well thought-out behaviors. Understanding how users and technology communicate with each other is the most fundamental consideration. Based on the principle and consideration in designing we consider the physical aspect of a messaging application; Facebook messenger, Viber, Skype, KakaoTalk and Line. Evaluating the preference of the user is like evaluating the user experience of the application. However, in this study, we evaluate the convenience of the design, services of each application and

Table 2. Case analysis model

Functional element	Detail analyze item			
Interaction	Button		Read sign	Emoticon
	Convenience	Service		
Communication	Profile picture		Message box	Voice message
UI design element				

Layout		Color	Text	Image	
Liberal composition	Grid		Serif	Illustration	Animation

significant features it offers in the physical aspect. As Norman claimed that aesthetic design can be even more influential in affecting user preferences than traditional operational usability [18, 19].

Convenience refers to the placement of the buttons, how they are organized, that would give an ease of use in the part of the user, as it is one of the principles of UI design. Organized placement of the buttons would give the user a clear and consistent conceptual structure of the layout. This makes it easier to navigate the application by the users themselves.

Services, apart from the main services offered in each messaging application, have other third party offerings that are available for each application. These other services may need to be purchased in order to avail. Messaging application has become popular in business and marketing. Read sign message status sign is an indication to know whether the messages have been sent and read. The different applications have different indications. To cite a few examples, in KakaoTalk, once the message is sent it shows a number depending on how many participants are involved in the conversation. And once the message is read the number disappears. In the case of Line, an arrow facing to the left appears during sending a message, and then disappears once it is sent. But when the message is read the word "read" appears right above the time indication.

The little yellow round faces are significant part of mobile modern life. They are very powerful tools in humanizing mobile messages. Some messaging application creates their own stickers or emoticons to attract users. For example, Line and KakaoTalk offers a variety of emoticons available free and to be purchased. Social media allows users to create an online identity through posting of content such as text, images, links or interaction with others. Profile images may be particular ones as these are representative for their online persona, and users can post pictures that do not stand for themselves. This choice is a type of behavior associated at least in part with personality [20].

The message box is an area where the intended message is encoded and displayed to be conveyed. Compared to SMS

text messaging the characters in chat application has no limits. The user can encode as many characters he or she wants. Voice messaging is an instant communication technology in which messages are transmitted via voice media. Voice messaging is an alternative to voice calls or text messages. Table 2 shows the functional elements common among the messaging applications. It is categorized into two categories: Interaction and Communication.

IV. EXPERIMENTAL RESULTS BY CASE ANALYSIS

The social networking service messaging service is categorized as a social networking service. We analyze five examples of social networking services, such as Facebook messenger, Viber, Skype, KakaoTalk and Line.

A. Functional Analysis

Facebook has a built-in instant messaging, which is referred to the Facebook Messenger, service which provides multiple features. Facebook chat layout window follows a simple grid system as mobile screens are limited. In its pre-chat form, it shows the list of people the user have chatted, the messages that are not read and show friends list who are active at the moment giving the user an idea who is available for chatting. The chat window which comprises many features is divided into three parts the header, chat view and the chat input as shown in Fig. 1(a).

Viber is messenger application which allows users to make phone calls and text messages to other Viber users for free. However, this application has a feature which is termed as "Viberout". This function enables users to send text messages and make phone calls to users who are not Viber users at low rates, so this has actually become popular. As shown in Fig. 1(b), Viber has a pre-chat view which displays the user ends' profile, number, free call and message button, and the free video call, Viberout call, and cellular call.
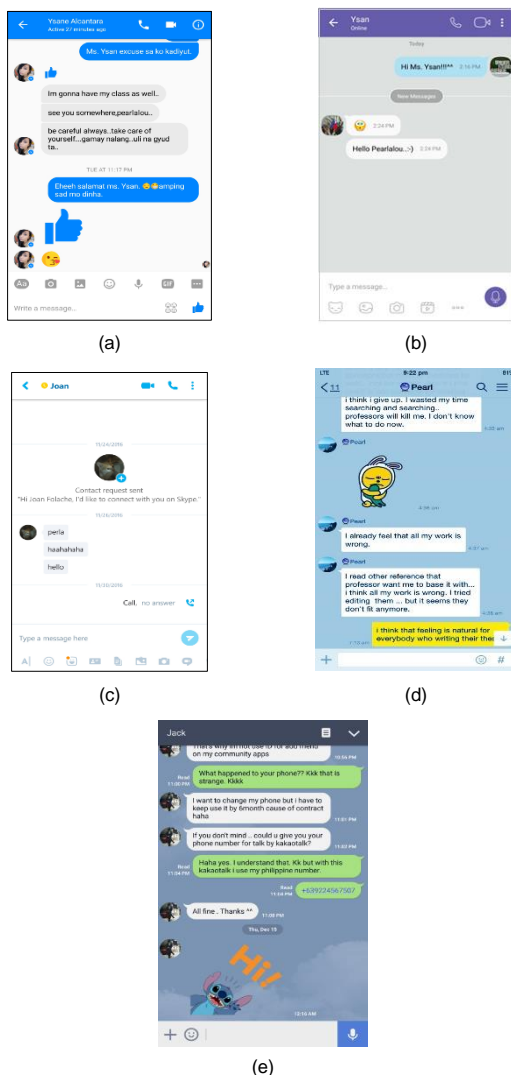
Fig. 1. Layout examples of instant messenger: (a) Facebook, (b) Viber, (c) Skype, (d) KakaoTalk, and (e) Line.

Skype is one of the popular social networking applications that is used to communicate using video, chats, calls, and voice chats. Many families with members residing or are currently working in another country utilize this application to connect with their loved ones. In some cases, skype is also used for business purposes like meetings in firms or even online teachings as it provides excellent quality of services for free.

As what can be seen in Fig. 1(c), Skype does not display any intricate design or color. However, it does show a minimal similarity among other applications' page layout.

KakaoTalk of Fig. 1(d) is a messaging application that is originated in South Korea and it is their first mobile messenger in the country. However, it also became popular to other neighboring countries like Japan, Europe and also in the East Asia. The most significant feature it provides is the free call and text messaging. And like any other

applications, it also allows users to share photos, videos, voice messaging and URL links to other KakaoTalk users.

Most instant messaging applications became popular for almost similar reasons; Free service, convenience, and stickers and emoticons. Line is not any different from that as shown in Fig. 1(e). This application is also originated in Korea. It first came out in summer 2011 and skyrocketed its popularity worldwide by 2013.

B. Analysis Result

According to the case study, the UI design of Facebook employs layout of grid form, which provides concise and orderly fashions, increasing legibility. The frequently used color is DodgerBlue representing Facebook which provides coherency to be used in upper part, speech bubble, and buttons. Standard font is without serif, which raises legibility in shorter sentences. It also appears that the use of emoticon with illustration and animation adds enjoyment to a conversation. In function wise, there are every essential such as message box, voice messaging and emoticons.

The UI design of Viber is the layout of grid form which grants impression of neatness so that it gives easiness on chatting. The Indigo color of the logo is used in upper part and buttons, which emphasizes the identity of the messenger and provides coherency. The basic Sanserif font is adopted enabling the users to raise legibility of chatting, and emoticon with illustration and animation is provided with various ways of chatting. Along with Facebook, all the user-friendly functions are there as well.

The UI design of Skype also adopts horizontal layout of grid form, providing simple chatroom. It mainly applies white background and the deep Skyblue logo color for the icon, so that it emphasizes frequently used icons and therefore provides easiness. The Gothic font without serif and various emoticons with illustration and animation offer an interesting conversation with high legibility. However, in Skype, functions are there but voice message.

The UI design of KakaoTalk provides the layout of grid form. The CornflowerBlue of the logo is used for the buttons, which is intended to function as emphasis, but it appears to hurt the overall coherency due to the various use of colors in the chatroom. This case also shows the provision of the font without serif in order to impress the users in terms of conciseness, and it is possible to use various free and charged emoticons with illustration and animation. Moreover, they offer every function as Facebook and Viber.

Lastly, the UI design of Line also employs layout of grid form offering concise chatting environment. The upper part of the chatroom is applied with more than three colors like the DimGray but not with that of the logo, degrading the coherence and the emphasis for the impression of the

Table 3. Analysis result

No.	Service	Functional element	Detail analyze item			
1	(Facebook)	**Interaction**	Button		Read sign	Emoticon
			Convenience	Service	o	o
			o			
		Communication	Profile picture		Message box	Voice message
			o		o	o
		UI design element				
		Layout		Color	Text	Image
		Liberal composition	Grid	Dodgerblue	Serif	Illustration / Animation
		×	o		×	
2	(Viber)	**Interaction**	Button		Read sign	Emoticon
			Convenience	Service	o	o
			o	o		
		Communication	Profile picture		Message box	Voice message
			o		o	
		UI design element				
		Layout		Color	Text	Image
		Liberal composition	Grid	Indigo	Serif	Illustration / Animation
		×			×	
3	(Skype)	**Interaction**	Button		Read sign	Emoticon
			Convenience	Service	×	o
			o	o		
		Communication	Profile picture		Message box	Voice message
			o		o	×
		UI design element				
		Layout		Color	Text	Image
		Liberal Composition	Grid	DeepskyBlue	Serif	Illustration / Animation
		×	o		×	o / o
4	(KakaoTalk)	**Interaction**	Button		Read sign	Emoticon
			Convenience	Service	o	o
			o	o		
		Communication	Profile picture		Message box	Voice message
			o		o	o
		UI design element				
		Layout		Color	Text	Image
		Liberal composition	Grid	Cornflower blue	Serif	Illustration / Animation
		×	V		×	o / o
5	(Line)	**Interaction**	Button		Read sign	Emoticon
			Convenience	Service	o	o
			o	o		
		Communication	Profile picture		Message box	Voice message
			o		o	o
		UI design element				
		Layout		Color	Text	Image
		Liberal composition	Grid	DimGray	Serif	Illustration / Animation
		×			×	o / o

o: able (provide), ×: n/a (not provide).

application. It has high legibility due to the use of the font without serif and provides sensible chatting environment because of the emoticons with illustration and animation. In addition, they don't have any missing functions to offer users.

After synthetically analyzed the cases, it is discovered that most of them employ neat layout of grid form, provide high legibility with the font without serif, and offer sensible, enjoyable chatting by using the emoticons with illustration and animation. In regard to color, however, Facebook, Viber, and Skype use the main color of the application logo appropriately to the upper part of the chatroom and icons, emphasizing the identity of the application and providing a coherent design. Reversely, KakaoTalk and Line do not use the main color frequently, which lowers the image representation and the overall coherency. The case study

result is abstracted in Table 3.

V. DISCUSSION AND CONCLUSION

This study has looked into the page layout design of and the functional elements provided by the different messaging applications and compared to see its difference and utilized information to determine whether its variance would explain the continuous use of the content. However, the case analysis shows very minimal disparities which make us conclude that there are other factors affecting the preference and persistence use of the application.

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