

An exploratory analysis and usability evaluation of fashion mobile applications

- Focus on Korea and U.S. App stores -

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Abstract

The aim of this study was to find typology of fashion-related mobile applications through exploratory investigation and to investigate differences in Korea and U.S. App stores. And then, through the qualitative evaluation about fashion mobile applications, this study proposes fashion mobile application's design and contents which can be preferred by users. By conducting keyword search in each store, 122 Korean applications and 150 US applications were analyzed. Empirical findings revealed that there were seven major types of fashion mobile applications: brand, magazine, information, SNS, game, shopping and coordination. Information type applications took up the largest portion, and SNS and game type applications showed higher ranking among customers. There were more game Apps in US and more shopping Apps in Korean stores. More free Apps were found in Korean App stores, whereas relatively more paid Apps were found in US App stores especially in game, magazine and information type applications. And as a result of usability evaluation of fashion mobile application, users prefer SNS and information category application to shopping and brand category. Also users want continuous improvement and new contents for fashion mobile application.

Keywords: fashion mobile application, fashion mobile application types, usability evaluation of fashion mobile application

I. Introduction

For several years in the past, a key word of the information communication industry and the media industry was 'Smart'. Gartner, Inc. in America as a company specialized in study and consulting business in the IT sector predicted that the size of the worldwide smart phone markets would exceed 600 million sets

in the next year and that sales of smart phone would reach to 616 million sets, more increased by 17.3% than 525 million sets which would be expected sales in this year. The Korean smart phone market rapidly grew with the domestic release of iPhone in 2009 and it is estimated the number of smart phone subscribers as of November 2012 reaches to 32 million persons. The increased use of smart phone satisfies the user's desire to more easily and conveniently enjoy

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internet search, email and game, etc. as evidenced in the fact that they have enjoyed through a desktop or notebook PC so far irrespective of location or time. Differently from the existing mobile phone, smart phone enables to create the environment suitable for individual users by adding or deleting various applications depending on individual desires and needs.

Like this, all sorts of mobile products & service and digital media targeted at users of smart phone are inundated in the market as the popularization times of smart phone arrive. Application, one of them means all software executed on the OS. Especially mobile application means contents software executed on a mobile terminal like smart phone. This mobile application is consumed by users after downloading from iPhone and android application (Oh, Kim and Moon, 2010). Representative application stores that can download these mobile applications include Apple's App Store that firstly started to provide application store service in July 2008 and Google's Android Market (currently changed to Google Play) that started to provide service in February 2009. Domestic corporations also struggled to show application stores and Samsung Electronics' application store started to provide service to the European markets in 3 countries including UK, France and Italy from September 2009 and SKT's 'T-Store' was established on the same month. KT's 'Show Store' (present Olleh Market) was established in November of the same year and LG's 'Oz store' (present U+ Store) was opened in August 2010. Like this, the worldwide mobile application markets continue to rapidly grow after Apple firstly started the mobile application business in the 2007 and major market research institutes and consulting service corporations in the world, and experts in every sector consider the application business as business to noticeable in the future.

The effect of smart phones becomes large in the daily life of users who "start a day with a smart phone and ended a day with smart phone." Various types of application regarding the fashion industry,

that is sensitive to a trend and where the flow of the market is rapid, also emerge since a lot of information are produced and expanded to the whole world in real time via smart phones. Fashion corporations and brands play a role of advertising their products and services and release applications as new tools to communicate with the users and continue to provide various and interesting contents and additional functions so that users are not bored with. The youths who are familiar with communications with other people by using social network services share their own fashion style with the global fashion peoples' fashion style in real time, and fashion information corporations rapidly deliver collection information and fashion news through applications.

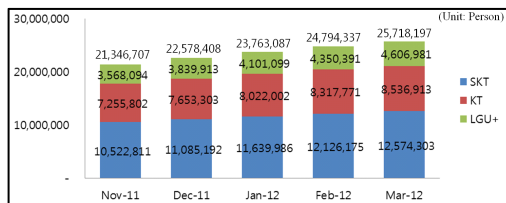
Even though application markets related with fashion are created like this, there are few studies to provide information and understanding for applications related with fashion up to now. Also Hong, Kim, Eun, and Jeong (2011) found some clear differences between countries in application preference according to the acceptance of new technology and cultural differences. Oh, Kim, and Moon (2010), on the other hand, analyzed application preference by country using CSC (Cultural dimension Score of Content type) and CSI (Cultural Index of Content) and showed very different results: Korea and U.S. showed a similar preference pattern. Thus, this study firstly define fashion mobile application and analyze common points and differences in various terms after classifying fashion mobile applications depending on components of contents in U.S. and Korea which are the leading countries in global smart-phone market. In addition, this study will examine the user's recognition and behavior for the fashion mobile application by performing FGI for the users who actually use applications after the selection of representative applications by category. Through these efforts, this study will be able to provide the general understanding for the fashion mobile application and contribute a corporation's the establishment of the more effective strategies by understanding the users' actual needs.

II. Review of Literatures and Research Question

1. Actual status of smart phone market

According to the data concerning smart phone sales by OS in the whole world, the 3/4 quarter of the 2012 which was issued by Gartner, a market research institute, iPhone's sales reached to 23.55 million sets and took charge of the global market share of 14%. According to Gartner, Android Phone's sales were 122.48 sets at the last year and achieved the market share of 72.4%, largely outstripping iPhone of 14%. Android Phone that firstly took charge of the market share of only 2% is making a governing status in the smart phone market in only 4 years after launching.

On the other hands, the distribution level of smart phone in Korea was very insignificant than foreign countries such as U.S. and Europe where the smart phone markets were active since the 2007 but smart phones started to spread due to domestic release of iPhone November 2009 (Choi and Kim, 2011). According to the recent data issued by the Korea Communication Commission, domestic subscribers of smart phone reach to total 25,718,198 persons as of March 2012 and take charge of 47% of the whole mobile communication service providers. But subscribers of smart phone among the domestic mobile phone subscribers totaled 53,454,610 persons as of November 2012 reach to 32,041,079 persons. The values are equivalent to 60% of the whole mobile communication users.



<Fig. 1> Trend of smart phone subscribers by domestic communication service provider

Source: Korea Communication Commission

2. Application store (App Store)

1) App store (Apple) and android market (Google)

There are various application stores at home and abroad but the share of OS markets summing Apple's IOS and Google's Android OS is 82.3% for smart phone sector and as a result, most of applications that are software for smart phone are developed suitably for this OS. Thus, this study limited an analysis of smart phone App stores to Apple's App Store and Google's Android. Apple's App Store was disclosed together with the release of 3G iPhone on July 2008 and became a direct opportunity to promote diffusion of mobile application stores. Verification procedures of App Store application have a closed type without outside disclosure and the inspection period of App Store is usually 14 days or so from presentation and approval (about 95% of the whole) and a month may be taken for applications with new or complicated issues. Over 775,000 applications are currently registered at App Store with the accumulated downloading cases in the last year and are classified into 23 categories including news stand, game, business, news, sports, health, fitness and travel so that users can easily search for their desired App and contents. On the other hand, Google's Android Market starting service together G1 of T-Mobile as first terminal on October 2008 has merits to minimize engagement for application differently from Apple's App Store and to maintain quality via user's evaluation. Android Market has a belief that bad applications will be drawn out by users' experience and determination on the premise that only good applications survive to thoroughly give the autonomous right to the market. Google Play (former Android Market) that currently rears App eco-system at a terrific rate also rapidly pursues Apple's App Store and currently holds over 700,000 applications. Gartner, a market research institute announced that downloading numbers in the whole world mobile App Store were 40.6 billion cases for free download and 5 billion cases for charged download, and that

they would exceed total 45.6 billion cases in the 2012. Considering that Apple's App Store takes charge of 25% of applications released at the whole store even though Android maintains a growth trend in terms of the share of the smart phone market, the Apple's market share in the application market is highest yet, and it is estimated that the application downloading numbers of Apple's App Store only in the 2012 will record 21 billion cases. These values show increase of 74% against the 2011 and show that the demand of mobile application contents for Apple is continuously high. In addition, the report by Gean Munster, an analyst of Piper Jaffray which is an investment bank in America predicted that Google's gross profits at the Android Market are only 7% of Apple's gross profits for App Store and that Apple's market share would take charge of over 70% at the mobile application market for 3 through 4 years in the future. Thus, this study included Apple's App Store that was the first App Store and steadily showed a high market share in a survey scope.

3. Definition and previous study of fashion mobile application

1) Fashion mobile application

Bae (2010) defines that fashion mobile application is an information OS related with fashion provided to users through 'App Store'. In this study, the fashion mobile application is limited to information application related with fashion that App Store provides, and application to provide information helpful for a fashion style. The fashion mobile application has characteristics of ubiquity to search for or communicate information in real time, personalization of contents suitably for user's characteristics and localization to provide contents on the base of user's position and related information. In addition, the fashion mobile application has aspects of basic information provision such as product information, store information in terms of contents composition and

aspects of entertainment to associate brands such as game, diary, art work and provision of mobile image. In addition, the fashion mobile application also has e-commerce aspect to connect purchase with product information, and social network aspects to communicate with other users (Choi & Lee, 2012).

2) Previous study on fashion mobile application

A study on application is one of subjects actively researched in recent days. Previous studies on the fashion mobile application include a study on classification and analysis of the fashion mobile application (Bae, 2010; Jang, 2011; Choi & Lee, 2012; Choi & Kim, 2011), a study on the characteristics and design of the fashion mobile application (Kim, Jang & Choi, 2011; Park & Choi, 2012; Suk, 2012; Lim, 2011) and a study on the use motive and shopping intent of smart phone (Nam, 2012). There was little study on comparing and analyzing the fashion mobile applications between countries. In addition, there was few study on making of actual users evaluate the usefulness of fashion mobile application even though the world fashion corporations have expanded the contact with customer by releasing branded applications since the 2008 (Choi & Lee, 2012). Thus, this study intends to compare and analyze fashion mobile applications (hereafter fashion mobile apps) in U.S. and Korea and provide basic data necessary for those corporations actually to develop applications by making the actual fashion mobile apps users evaluate the usefulness of the representative fashion mobile apps in U.S. and Korea.

4. Business model of mobile application and smart phone

Yoon and Choo (2011) explained that smart phones provide various utilities incomparable with the previous personal PCs by combining the characteristics of a mobile phone of which portability and movement are free, and of a personal PC on which web connection and the use of all sorts of application

program is easy. In other words, the utility of smart phones covers the scope that cannot be explained with the existing paradigm including functions beyond count that various application programs provide comparatively basic functions such as search and information provision via a web as well as function as communication channel. Like this, application programs available through downloading from smart phones are generally called 'mobile application' and refer to smart phones with functions of internet access, management of individual information and portable multi-player like Apple's iPhone, Android's Motorola or software driven by mobile devices such as portable media player iPod (Korea Fashion Association, 2011).

According to Kang (2011), the business concept of a revolutionary smart phone that is reforming the industrial structure of mobile and wireless internet at a terrific rate in this way can be expressed as US2US differently from the existing network business model such as B2B between business and business or B2C between business and user. Differently from the existing business model, a smart phone network with the network formation relationship between user and user shares information through a virtual space called App store for communication, and the developer distributes the application that it develops via the space. Thus, to develop a good application with competitiveness among many applications produced by a lot of application developer in the world, it is important to firstly analyze the actual conditions for major application stores, understand users' needs and wants and create sympathy with users via experiences.

5. Research question

Research Question #1: To classify fashion mobile apps and to analyze current status of fashion mobile app market

Research Question #2: To identify user satisfaction level according to country and category

Research Question #3: To compare business model between U.S. and Korea

Research Question #4: To assess usability evaluation of fashion mobile applications

III. Research Method

1. Search method of application

To successfully provide services under the opened application market, a process to understand users is more required than anytime. Especially, examining how different preference by nation is for applications of smart phone as difference in a digital contents type mainly consumed by nation appear can play a role of guide in the development and distribution of the future applications (Oh et al., 2010). Accordingly, this study is based on App Store and the researcher intend to analyze the types of fashion mobile apps downloaded and consumed mainly around U.S. and Korea according to the classification system of a mobile application on App Store. To search for the fashion mobile app, a search word, 'fashion' is used at Korean stores and U.S. stores respectively according to 'relevance', a general search arrangement for top 122 Korean applications and 150 US applications.

2. Selection of FGI participants

The researcher used purposive sampling methods to recruit participants. Four participants were recruited by posting on our university Internet boards and other three participants were recruited by recruited by posting on our university Internet boards and other three participants were recruited by using snowball sampling. This study conducted focus group interviews (FGI) with these 7 iPhone users in the 20s through 30s who were actual users of fashion mobile app. Guideline was composed of 1) questions for general app 2) questions for fashion mobile app and 3) questions for 14 representative apps. This study was conducted from June 2012 to December 2012.

3. Selection of representative application by category

〈Table 1〉 Personal characteristics of F.G.I recipients

Case No.	Sex	Age	Vocation	Major/business
1	Male	26	College student	Electronic/electric engineering department
2	Male	25	College student	Dutch language department
3	Male	24	College student	Management department
4	Female	27	College student	Composition department
5	Female	23	College student	Clothing department
6	Female	30	Graduate student	Clothing department
7	Male	34	CEO of fashion advertiser	Production of fashion brand advertisement

〈Table 2〉 F.G.I question guide

Questions for general application
1. How many applications per month do you download?
2. Have you purchased charged application?
3. What do you think most important when downloading application?
4. How many application stores do you have? If more than one, what's account that you use?
Questions for fashion mobile app
1. Have you download fashion mobile app?
2. Do you have purchased objects by using fashion mobile app?
3. If you have purchased (or have not purchased) objects by using fashion mobile app, what's reason?
Questions for 14 representative apps
1. Is there application that you have used among 14 representative applications?
2. Select the best application and the worst applications by country among 14 representative applications that you think.
3. Please provide simple comments for 14 representative applications.

The researcher performed searching by store with search arrangement in the most popular status and selected an application firstly searched by category at Korea store and U.S. store.

IV. Results and Discussions

1. Classification of fashion mobile app

If searching 'fashion' in Korean and English on App Store, various applications related with fashion are searched. Fashion mobile apps were classified variously according to the researchers. In this study, total seven categories were used based on the classification of Jang (2011).

First, the fashion brand application is an application

made to advertise brands and this type of brand application is composed of application for presentation and application that provides only special contents without presenting products. Second, the fashion brand application provides contents issued by the existing fashion magazine via application. This application is featured that contents such as provision of mobile image are additionally introduced to differentiate from a paper magazine. Third, the fashion information application is an application that provides recent information regarding fashion or street snapshot, etc. It is a type that update by single direction (producer) is mainly more made than update of information by both directions (producer, user). Fourth, the fashion shopping application is a type that allows shopping

〈Table 3〉 Classification method of fashion mobile app

Classification method of on the Jang. (2011). p.93	
Classification	Type
Brand	Advertisement basis of specific fashion brand
Magazine	Provision of fashion information in an E-book type
Information delivery	Provision of recent fashion information and contents
Shopping type	Mobile shopping mall
Classification method of on this study (2012)	
Classification	Type
Brand	Advertisement basis of specific fashion brand
Magazine	Provision of fashion information in an E-book type
Information delivery	Provision of recent fashion information and contents
SNS	Style evaluation on social network
Game type	Game progressed on the subject of fashion
Shopping type	Mobile shopping mall
Coordination	Management of virtual coordination and closet

via application and is featured that there are many applications on the existing internet shopping mall.

Fifth, fashion SNS application provides fashion information similarly with the information application type but data entry type is made by both directions (producer, user). Sixth, fashion game application is an application with contents of fashion-oriented game and most of them are made of subjects such as wearing of clothes or becoming of fashion star. Seventh, fashion coordination application is made of contents such provision of virtual coordination to users or management of the user's clothes closet by making a virtual clothes closet.

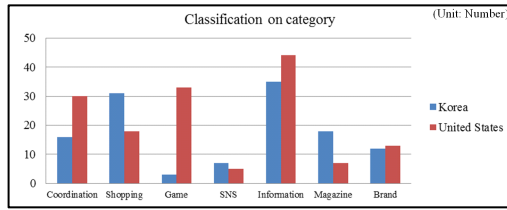
2. Comparative analysis between Korean fashion mobile app and U.S. fashion mobile app

1) Analysis by category

〈Table 4〉 Classification method of fashion mobile app on the previous studies

Researcher	Classification	
Choi, G. H., & Lee, S. H. (2012)	Fashion brand	Luxury
		Womens' wear
		Mens' wear
		Casual
		Sports
	Non-fashion brand	Acc, etc.
		Commerce
		Magazine
		Information
		Style tip
Choi, Y. S., & Kim, M. Y. (2011)	Basic information	SNS
		Wardrobe manager
		Product information
		Store information
	Additional information	Fashion information
		Coordination information
		Entertainment information
		Hobbies & life information
		Mutual experiences information
		Sharing services information
Korea Fashion Association (2011)	Wardrobe organizer	
	Style tip	
	Shopping	
	Designer brand	
	Style advice	
	Fashion news	
	Brand identity delivery	
	Practical contents provide	
	Entertainment	
	Public value delivery	
Lim, J. Y.(2011)	Magazine oriented contents	
	Brand oriented contents	

As the results of classifying U.S. stores and Korean stores, it was shown that 'game type' of application took charge of a high weight for U.S. stores and that 'shopping type' of application took charge of a high



<Fig. 2> Classification of fashion mobile app in Korea and U.S. depending on category

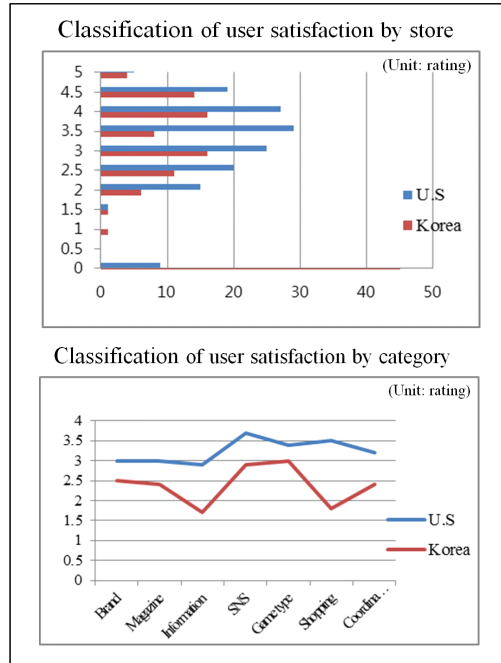
weight for Korean stores. These result was consistent with previous studies that U.S. users were more preferred ‘game type’ application compared with Korea (Kim, Eun, Jeong, & Hong, 2010; Oh et al., 2011). And the weight of an ‘information delivery type’ of category highly appeared for both stores. Since fashion industry is sensitive to trend that these ‘information delivery type’ application were developed by a large demand to search for information

2) Analysis by user satisfaction level

If analyzing the fashion mobile app on user satisfaction, it was appeared that most users in Korea and U.S. gave rating between 2.5 through 4.5 when providing rating for applications but it could be seen that the whole rating was higher for U.S. stores than Korean stores (1=very bad, 5=very good). If examining rating by category, the average rating of the SNS type of applications was highest for both U.S. stores and Korean stores. It is analyzed that the SNS type of applications give relatively a high level of satisfaction since users becomes producers and information update is complemented due to mutual communication between purchasers for the SNS type of applications, while other applications fails to give a large satisfaction to users since a steady update is not done after the manufacturing.

3) Analysis by business model

According to a report by KOCCA(Korea creative content agency), there are three types of ‘Charged model (One-time Fee/subscription model), and ‘partially



<Fig. 3> Classification of fashion mobile app in Korea and U.S. depending on user satisfaction

charge-oriented’ called ‘Freemium’.

The business model of ‘partially charge-oriented’ is evaluated as a business model with the highest profitability due to the recent success of ‘Anipang’. This study performed an analysis by including the ‘partially charge-oriented’ model in the ‘charged’ model. As the result of analyzing the fashion mobile apps in U.S. and Korea by business model, it was analyzed that the weight of charged model for U.S. stores was larger than Korean stores. If examining the characteristics of business model by category, the weight of ‘information delivery types’ and ‘coordination types’ of the charged models largely appeared in U.S. stores, while the weight of ‘coordination types’ of the charged models largely appeared in Korean stores. For the ‘information delivery types’ and ‘coordination types’, the weight of the charged models highly appeared in both stores. For the ‘brand type’, ‘SNS type’ and ‘coordination type’ of category, it was appeared that both stores provided service only

<Table 5> Classification of fashion mobile app in Korea and U.S. depending on business model

	United States (n=150)		Korea (n=122)	
	Free	Paid	Free	Paid
Brand	12	0	13	0
Magazine	17	1	5	2
Information	33	2	30	14
SNS	7	0	5	0
Game	3	0	25	8
Shopping	31	0	18	0
Coordination	13	3	19	11
Total	116	6	115	35

in a form of free model. Applications targeted at advertisement of specific brand or product or at sale of products and applications (SNS type) that data update was achieved by users were provided in a form of free model. It could be seen that the application type requiring a steady update of information and the application type with entertainment factors were provided in a form of the charged model.

3. Users analysis through F.G.I

1) Utilization patterns of mobile application

Respondents answered that they averagely received 5 new applications or so a month. It was similar level with answers that iPhone users averagely downloaded 6.6 applications a month in a 'survey of smart phone users in the first quarter of the 2012' that KTH, a smart mobile company and Podgate, the largest application portal in Korea jointly performed for 7,815 smart phone users in Korea. It was far not reached to the level that respondents answered to download average 7.8 applications per week at the 'survey of smart phone users' actual conditions in the first half year of the 2012' for 4,000 smart phone users that Korea Communication Commission performed together with Korea Internet & Security Agency.

"I averagely download 3 through 5 new applications. After trying to use, I immediately delete it if failing to my expectation." (Example 7)

"I am eagerly to download since I bought a new Iphone lately. I likely download 3 through 5 applications." (Example 6)

3 persons of 7 respondents have experiences of charged purchase regarding purchase experience of charged applications. Most of them purchased them in the game category. 76.8% of mobile application download users downloaded 'game, recreation' mobile application and many respondents answered that mainly used mobile applications were 'game, recreation' (64.8%), and thus game and recreation of mobile applications were very favorite. This is also consistent with the results of previous study.

"Charged application? I download a lot of application. I mainly download games and also download navigation since there is application for schedule management and my car. Since there are a lot of free applications in relation with fashion, I never purchase them with monies." (Example 7)

"I have downloaded charged game application. There are many good applications. There was no charged application for me to purchase with monies." (Example 3)

In addition, there were respondents who answered that they downloaded charged applications by using the time since charged applications are freely provided due to time limit.

"Nowadays, there are 'free only today' applications. I would use service to provide information to freely download only for a constant period even though they are charged." (Example 2)

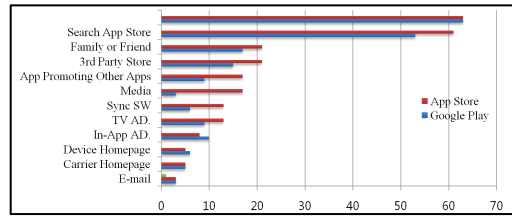
According to a survey performed by NIELSEN, a

worldwide professional market research institute (Mar. 2011), users presented search (63%) and recommendation of acquaintances (61%) as method to access to a new application.

Even in this study, respondents answered that recommendation of acquaintances had effected on downloading of new applications and it was analyzed that a type of downloading new applications was largely reduced due to simple curiosity as the smart phone market reached to the stability period. In addition, 3 persons of 7 respondents thought screen shot as the most important part when downloading new applications and icon image was the next sequence. Additionally respondents recognized that rating was one of important factors to download application and did not think title so importantly. These results were also similar with the survey results performed by KTH that iPhone respondents considered charged or free application and ranking for 3 factors having the largest effect on the installation of application. Especially, according to KTH, the results of analyzing factors to have effect on the installation of application were analyzed by age. Visual factors such as screen shot and preview for the youth layer of the 10s through 30s and text such as application explanation for the 40s through 50s had effected. Like this, FGI reported that the youth in the first half of 20s answered that screen was most important and the 30s respondents as in examples 6 & 7 thought rating most important fact. Accordingly, it was noted that factors to have effect on the downloading of applications varied on the age.

“I download most of new applications on account of my friend's recommendation. I meet my friends and talk about favorite applications nowadays and often ask them “Are there something interesting nowadays?” (Example 1)

“I consider image shot as the most important when downloading applications. Next is icon image. If down-



<Fig. 3> Method to identify a new mobile application

loading them, I could see them whenever using a mobile phone. Pretty applications are good.” (Example 3)

“I often see user's evaluation when downloading applications. Especially when downloading charged application. I firstly try to use free versions such as experimental version before downloading charged applications and then download charged application. Of course, a shape of icon is also important.” (Example 7)

“Since I firstly use iPhone, I consider recommendation of neighboring peoples for reference.” (Example 6)

Most respondents answered that they have 2 accounts for the question about how many store account have. All users had Korean account and U.S. account and had Japanese account as other account.

“I have Korean account and U.S. account. In the early time, I used more frequently U.S. account and now use Korean account frequently. For my memory, there was maybe no game at App Store when iPhone was firstly introduced to Korea. However, there are now almost all applications at Korean App store.” (Example 7)

2) Utilization patterns of fashion mobile app

Most respondents answered that they downloaded fashion mobile apps but deleted the fashion mobile apps not continuously used. That was why a mobile phone became slow and seemed duty if there were many applications not used. Despite everything, fashion mobile apps that respondents presently held were

information delivery type of fashion mobile apps and brand type of fashion mobile apps and it was analyzed that new information and direct discount benefits made continuously use application.

“In the past, I have downloaded branded applications such as Nicky, Uniqlo due to my work of manufacturing application. After that time, I immediately deleted them since there was no work of using them. Because the screen of mobile phone seemed duty.” (Example 7)

“I downloaded application for department store, favorite brand and magazine application. For me, application for department store had discount information. I relatively used branded application since it is very convenient when visiting nearby stores. I saved a lot of pretty pictures for magazine application.” (Example 1)

It was appeared that purchase of products through the fashion mobile apps was not properly stabilized yet. There were also respondents who did know about that settlement via application was possible. For the respondents concerning about drain issues of personal information or a settlement system not be verified yet and the fashion products, respondents answered that a PC with a large screen to scrutinize products was more convenient had repulsion against the purchase of products via the fashion mobile apps yet. Respondents answered that they had will to try to use new applications if special benefits were given but it was analyzed that the concern about the settlement and drain of personal information must be removed with the first priority.

“There are a lot of web sites where settlement is not done via a mobile. Is it possible to settle without accredited certificate for a mobile phone?” (Example 2)

“There are many bad news for the drain of per-

sonal information in the early time of mobile phones. There are also talks not to mindlessly download applications. So, I am lightly concerned about. However, I will try to purchase new applications if benefits such as discount coupon or free delivery are given.” (Example 6)

“I do not purchase products via a mobile phone since there are a lot of times to use a PC. Especially for the fashion mobile apps, it is better to see them through the PC screen. To the contrary, I never concern about security.” (Example 7)

3) Utilization patterns and usability evaluation of 14 representative applications

4 persons of 7 respondents answered that they had used Style.com application. It was appeared that Style.com among representative fashion mobile apps was application mostly used by respondents. In addition, respondents answered that had used brand applications of Forever 21 and H&M and applications with main purpose of delivery information such as First Look Magazine. Among 14 applications, 3 respondents selected Wanelo Shopping, a SNS type of application at U.S store as best application, and the remaining respondents selected Style.com, an information delivery type of application as best application. 5 respondents selected Fashion Icon, a game type of application at U.S. store as worst application, and a respondent selected Cool Guy, a coordination type of application as worst application. A person of 7 respondents answered not to download fashion-related application at U.S. store. At Korean store, 5 respondents selected H&M, a brand type of application as best application, and a respondent selected Auction, a shopping type of application and First Look Magazine, a magazine type of application as best application respectively. 4 respondents selected Fashion Icon, a game type of application at Korean store as worst application, and 2 respondents selected STYLE Share, a SNS type of application and a remained respondent selected H&M,

a brand type of application as worst application.

“There is no in U.S. I used H&M, First Look and STYLE Share for Korea. But they were not so good. Brand application looks pretty but there was no useful information except for brand introduction. Design or interface was somewhat rough for STYLE Share. Quality of photos that the individual loaded was not so good.” (Example 7)

“I like Forever 21 and Style.com. I frequently use Forever 21 while seeing Look Book for reference of coordination. If they are favorite to me, I save photos. It is easy to save photos on a smart phone nowadays. Style.com has a lot of good contents. Update is steadily done. It is helpful to me since my major is clothes science.” (Example 6)

4) Comments for every representative application

As the results of a preference survey for the fashion mobile app, it was appeared that the preference level for the fashion mobile app with the purpose of providing information of the fashion mobile apps was high. It was appeared that a brand type of application gave somewhat repulsion since it came to users as image of application for the advertisement. It was appeared that a magazine type of application required a platform differentiated from a paper magazine. Attempts such as a replay of mobile image were made but there are peoples to have repulsion due to reduction of speed. For an information delivery type of application, it was appeared that a steady update of new data and menu composition power were important. Important thing at SNS application is a differential intuitive interface to ensure that a person who firstly contacts with application can continuously use it. It was appeared that a shopping type of application generally gave satisfaction to users but it was analyzed that the reliability degree for the billing system must be firstly established if transaction would actually occur. It was analyzed that users failed to

largely feel the necessity for a coordination type of application when comparing with the idea and thus the establishment of more actual and useful contents was required.

V. Conclusion

This study was intended to help the general understanding for the fashion mobile app and contribute the establishment of the effective application strategies for corporations by understanding the users' actual needs. For the purpose, the researcher presented factors that the fashion mobile app reflecting the users' actual needs must have through the F.G.I survey method together with the experimental analysis of the existing raw data and App store. It was determined that there was no application to represent the whole fashion mobile app sector differently from applications in other sectors in the application markets with sufficient market size and prospect. This phenomena was likely considered as a result that there was no a fashion expert among engineers who made applications and that there was no application engineer among fashion experts. As results of comparing fashion mobile apps in Korea and U.S, difference between U.S. and Korean users for the fashion mobile app evidently appeared. First of all, favorite fashion mobile apps were mainly game types for U.S. stores and were information delivery types for Korean stores. It was considered as result that regulations against game contents are released for Korean stores and that information delivery types of application become large for Korean stores. In addition, in the business model, it was appeared that Korean stores had the less weight of charged application than U.S. store.

Next, factors that respondents considered important when downloading applications included design and rating of screen shot, recommendation by acquaintances as the result of progressing FGI for behavior and use of the fashion mobile app for 7 users who actually used the fashion mobile app. Especially, it was appeared

that there was difference by age when downloading application in the answers that the youth favored visual factors such as screen shot and icon, while over the 30s considered that actual experience such as ranking and use experience was more important. In addition, there were many respondents who met new application through recommendation of acquaintances and it is analyzed that download more increased through recommendation of acquaintances than curiosity as distribution of smart phone was stable. In addition, respondents for 14 representative fashion mobile apps most favored information delivery types and SNS types and considered the points that contents update was continuously not and that loading speed was slow when executing applications as largest complaints.

On the above results, firstly composition of intuitive interfaces that were not complicated and intuitive must be executed to satisfy the fashion mobile app users' needs. Secondly, useful contents must be provided to users by a steady data update. Thirdly, for replaceable categories (for example, magazine type or shopping), certain USP obtainable by using a corporation's unique application must be provided to users. Lastly, access to the user must be provided without giving feeling of brand PR for a brand type.

This study has limitation in points that study for Android and various OS is not achieved and that users with various sexes and age are not included since FGI is done to users who mainly use the fashion mobile app. Also this study conducted only exploratory analysis and fashion mobile apps were classified based on subjective assessment of the researcher. This study, however, is considered a meaningful study because sufficient studies regarding users' tendencies by nation for the fashion mobile app, and regarding user's behavior and evaluation of the actual application were not achieved so far. Moreover, this study was to provide basic information on fashion apps and to offer better understand of users and developing applications in the future. The further quantitative researches for users including more various age and OS will be

helpful for that good quality fashion mobile app contents emerge in the growing application market in the future.

References

- Bae, E. K.(2010). A study on perceived value and user satisfaction and intention to reuse corresponding to characteristic factors in mobile fashion application: Focusing on consumer innovation and smart phone lifestyle. Unpublished master's thesis, Yonsei University, Seoul, Korea.
- Choi. G. H., & Lee. S. H.(2012). A study on information-seeking benefits of fashion applications of users and their effects on loyalty and satisfaction: Focused on iPhone fashion applications. *Journal of Fashion Business*, 16(2), 27-43.
- Choi. Y. S., & Kim. M. Y.(2011). An analysis of the fashion brand application. *Journal of Fashion Business*, 15(5), 129-143.
- Christy, P., & Rob, M.(2012, November 14). Gartner says worldwide sales of mobile phones declined 3 percent in third quarter of 2012; smart phone Sales Increased 47 Percent. *Gartner*. Retrived January 12 2013, from <http://www.gartner.com/it/page.jsp?id=2237315>
- Hong, S. M., Kim, H. S., Eun, H. Y., & Jeong, K. Y. (2011). Desirability of mobile applications affected by different cultural attributes focused on comparison of mobile applications in Korea and US. *Proceeding of 2011 Conference on the HCI Society of Korea*, 1, 702-705.
- Jang, S. H.(2011). A study on the process of advertising acceptance and the advertising strategies of fashion brand applications according to the characteristics of smart phone users, Unpublished doctoral dissertation, Sookmyung Women's University, Seoul, Korea.
- Kang, M. J.(2011). A quantitative analysis of the satisfaction about interface design based on smart-phone application: Focusing on the playfulness

- applications. *Journal of the Korean Society of Design*, 17(1), 1-9.
- Kim, U. K., & Lee, D. H.(2011). Domestic and foreign smart phone application market trend analysis. *Korea Institute of Information Security And Cryptology*, 21(1), 26-37.
- Kim, Y. R., Jang, E. J., & Choi, J. H.(2011). Trait factors of smart phone application influencing the formation of a brand image: Focusing on department store applications. *The Korea Contents Association*, 11(8), 102-111.
- Korea Fashion Association.(2011). *Trends of fashion mobile applications*. Seoul: Apic Design Co. Ltd.
- Lee, Y. H.(2011). Status and prospects of mobile application business. *Korea creative content agency*. Retrived April 16, 2013, from http://www.kocca.kr/knowledge/publication/focus/1759781_4445.html
- Lim, J. Y.(2011). The study of usability evaluation method for smart phone magazine application: Based on usability, usefulness, effect component for evaluating satisfaction. *Proceeding of 2011 Conference on the HCI Society of Korea*, 1, 1075-1078.
- Nam, M. W.(2012). A study of the smart phone using motivation and the intention of shopping for beauty and fashion products among 20's~30's female. *Journal of Digital Design*, 12(3), 471-484.
- Oh, J. M., Kim, H. H., & Moon, N. M.(2010). A study on the preference of the smart phone application by country using analysis of the propensity to consume. *2010 Korean Society of Broadcast Engineers Summer Conference*, 328-329.
- Park, M. S., & Choi, G. U.(2011). Trait factors of smart phone application influencing the formation of a brand preference: Focusing on domestic men's wear brand. *2012 Kocon Spring Comprehensive Academy Conference*, 71-72.
- Philip, E. D.(2011 November 21). Piper Jaffray: Android app revenue is 7% of iPhone's. *CNN Money*. Retrived January 12 2013, from <http://tech.fortune.cnn.com/2011/11/21/piper-jaffray-android-app-revenue-is-7-of-iphones>
- Suk, K. J.(2012). Emotional experience design evaluation factors for smart phone applications. *Journal of Korean Society of Design Science*, 25(4), 13-24.
- Yoon, N. H., & Choo, H. J.(2011). The effects of mobile using benefits and costs on the self-connection with mobile device: Comparing between mobile fashion application users and non-users. *Korean Society of Consumer Studies*, 22(2), 227-252.