The Study for Vitalization of the Fixed Mobile Convergence

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Abstract

This study surveys the current status of use of FMC (Fixed Mobile Convergence) services, predicts which of the services will emerge as leading services in the future FMC market, and investigates how the intention to use FMC services is affected by their usefulness and price, and what role customers' loyalty toward a business plays in this relationship of influence. The results of this study can assist telecom operators in designing competitive FMC service bundles, pricing policy and marketing strategy.

Keywords: *Fixed Mobile Convergence, FMC, Convergence IT*

1. Introduction

With the progress in IT and changes in economic and market conditions, the phenomenon of digital convergence is today no longer limited to certain industries, markets or regions, but is becoming a cross-industry and global phenomenon. Diverse new trends both at a technological and a consumer level are providing IT and telecom companies with opportunities to achieve sustainable growth through products and services with greater value, which can deliver greater convenience and usefulness to consumers.

Of the many and varied initiatives underway, in line with the larger trend of digital convergence, the one that stands out the most both in terms of scale and speed is the convergence process between fixed and mobile communications taking place in the communications service sector. In recent years, the profitability of Korean telecom operators fell sharply, on the one hand due to the subscriber market reaching saturation, and on the other due to the introduction of number portability. The pressure from consumer organizations and the government to lower call prices, meanwhile, has been yet another source of strain for struggling telecom operators. As a way out of this situation, telecom operators are adopting a new business model based on FMC (Fixed Mobile Convergence) services. In this paper, we examine the overall status of FMC services, measure consumers' perception of their usefulness and price perception as well as customers' loyalty to determine how these variables influence the intention to use these services.

2. Theoretical foundations

2.1 The Concept of FMC Analysis and Implications

First, to review Fixed mobile convergence (FMC) refers to services and service strategies providing the additional value of converging fixed telephone service with mobile phone services. FMC services, therefore, designate any services combining communications between parties in fixed locations and in a mobile environment. FMC services are the first of the various converged digital services and bundled fixed and wireless services, which have been on the table since the late 1990s, for which attempts at commercialization were made.

The telecom market in Korea was born, in a strict sense, in July 2007 when a series of rule changes made it possible for its dominant supplier to offer bundled services with possibility of price discount. Competition in bundled fixed and wireless services kicked off in full swing in 2009 when the merger between KTF and KT was followed by LGT's absorption of LG Dacom and LG Powercom and cooperation between SKT subsidiaries.

2.2 Technology Acceptance Theories

Three of the most influential theories about the acceptance of information technology are the theory of reasoned action (TRA), a socio-psychological theory whose main constructs are trust, attitude and behavior; the theory of planned behavior (TPB), expanding on TRA; and the technology acceptance model (TAM), modifying TRA. The TAM proposed by Davis [1] lays particular emphasis on the soundness of measurement tools. It has been validated by many researchers who applied it to the analysis of acceptance behavior in new information technologies, and has also been modified or expanded by an equally-important number of researchers. In this study, we will attempt to understand consumers' acceptance behavior vis-à-vis bundled fixed-mobile services by applying the above three theories: namely, TRA, TPB and TAM.

TRA is a theory on determinants of consciously-intended actions, which is widely used in the field of social psychology [2]. According to this theory, the concrete results of a person's action are determined by his or her behavioral intention, which, in turn, is determined by a complex interaction between attitude and subjective norm. Hence, under a TRA framework, behavioral intention is the dependent variable, and a value is predicted for the actual action. Attitude and subjective norm, meanwhile, are believed to vary depending on the individual or the type of action.

TPB expands on TRA by adding the construct, 'perceived behavioral control.' Three elements of TPB, according to Ajzen [3], are attitude, subjective norm and perceived behavioral control. Attitude corresponds to an individual's degree of like or dislike for a product or service. Subjective norm is defined as the degree of perception of social pressure which is experienced when people use a product or service. Perceived behavioral control is the degree of ease or difficulty of using a product or service and takes into account both a user's past experience using a product or service and the anticipated level of ease or difficulty in the future use of a product or service.

The TAM proposed by Davis [1] is a model of user acceptance of information systems, created based on the theoretical framework of TRA. TAM provides explanations about determinants of acceptance of information technology, as well as a basis for analyzing how internal factors such as trust, attitude and intention are influenced by external factors.

In this study, using the conceptual tools provided by the above theories, we will attempt to determine factors that influence consumers' intention to use FMC services.

3. Results and Implications Research Design and Analysis

3.1 Research Model

The purpose of this study is to determine factors influencing consumers' acceptance of FMC services, services which have become popular in Korea in recent times. To do that, we will begin by checking how users' intention to use FMC services is influenced by their perceived usefulness and appropriate pricing (economical pricing), the two motivational variables of TAM, a model widely used for acceptance studies in information systems. Since in the Korean telecom market, a fixed and a mobile operator are designated as operators with significant market power, we designed our research model by adding customers' loyalty toward these operators as a moderating variable. We formulated the hypothesis that consumers' intentions to use FMC services are directly affected by their perceived usefulness of these services and their price, and that loyalty acts as a moderator in this relationship of influence. Davis [1] stated that perceived usefulness and intention to use have a positive relationship. This was empirically validated by Szajna [4], who found that the intention to use email was positively affected by the perceived usefulness of e-mail. Other empirical studies based on TAM such as Paul [5] and Tayor [6] reported that the intention to use an information technology was positively influenced by its perceived usefulness. In a study on return visits to a website, Lin [7] also proved empirically that the intention to revisit a website is directly affected by its perceived usefulness. Accordingly, in this study, we set up a hypothesis that the intention to use a FMC service is positively (+) affected by its perceived usefulness and is also influenced by customers' loyalty, the moderating variable.

Joo [8], in a study on consumers' adoption of two-way TV services, reported that the decision to adopt a new technology can be decisively influenced by the appropriateness of pricing (economical pricing), while Slonim [9] said that the intention to use or choose a product is negatively affected by high purchase prices. Park [10], meanwhile, found that the extent of adoption of a product is influenced by the appropriateness of pricing, via the intermediary of its perceived usefulness. It was also pointed out in a report by the KISDI (Korea Information Society Development Institute) [11] that economic effects of WiBro, including reasonable pricing and cost-saving effects, were highly important variables for its acceptance. We, therefore, formulated a second hypothesis that consumers' intention to use a FMC service is positively (+) affected by its economical pricing (appropriate pricing), and is further influenced by people around them.

Loyalty, as an intentional factor influencing perception and emotional behavior, can be said to be a function of how a customer evaluates a brand in comparison to another alternative brand [12]. This evaluation is not an absolute evaluation, but a relative one. In this study, the role of loyalty was verified under the hypothesis that it has a positive (+) influence on the relationship between the perceived usefulness of a product, its economical pricing and the intention to use it.

3.2 Data Collection and Result

To achieve the goal of this study, we conducted a survey on 100 people. A general survey was performed on the 100 respondents, asking their intention to use a FMC service and the type of service bundles they prefer. The usefulness of a FMC service was selected as the independent variable, its price as a moderating variable, and the intention to use a FMC service as the dependent variable.

Table 1. Research Result

Panel A

Model	Variables	Coefficient		t	F	R^2
		Beta	S.E			
1	Constant	3.326	0.334	9.937 ***	43.531 ***	0.301
	Usefulness	0.425	0.065	6.987 ***		
2	Constant	4.108	0.271	15.147 ***	28.102 ***	0.227
	Customer Royalty	0.298	0.056	5.321 ***		
3	Constant	4.513	0.763	5.938 ***	22.457 ***	**0.499**
	Usefulness	0.157	0.158	1.329 ***		
	Royalty	0.205	0.177	0.147 ***		
	Usefulness* Customer Royalty	0.081	0.034	0.978 ***		

Panel B

Model	Variables	Coefficient		t	F	R^2
		Beta	S.E			
1	Constant	2.376	0.386	6.027 ***	62.832 ***	0.392
	economical pricing	0.542	0.069	7.942 ***		
2	Constant	4.098	0.282	15.187 ***	28.272 ***	0.227
	Customer Royalty	0.296	0.057	5.321 ***		
3	Constant	2.642	1.543	1.715 ***	31.845 ***	**0.485**
	economical pricing	0.329	0.252	1.337 ***		
	Royalty	0.031	0.387	0.161		
	economical pricing * Customer Royalty	0.035	0.058	0.972 '		

Usefulness means the extent to which a customer believes that using a given system has improved their efficiency in performing tasks. Usefulness, selected here as the

independent variable, means, in the case of FMC services, how useful a user perceives these services are. The questionnaire was designed, drawing on the works by Jang (2007) and Moore (1991). Pricing appropriateness (cost), meanwhile, signifies how reasonable a user feels the cost of using a FMC service is, and we drew on the works by Kim (2005) and Regan (2002) to formulate related questionnaire items. Loyalty was defined as a behavior in which customers continue to purchase or use products or services from an existing seller or provider, in spite of potential efforts on the part of alternative sellers or providers to switch them over. Finally, acceptance was defined as consumers' positive perception of FMC services or the intention to continue to use them. Questions related to acceptance were formulated by consulting the works of Park (2008), Kim (2007) and Davis (1999).

All questions were measured using a Likert 7 scale. The analysis of the service usage profile, meanwhile, revealed that a relatively small number of households used internet telephony or IPTV, whereas most used mobile and fixed telephony and the internet. Hence, the potential market for FMC services, bundling internet telephone and IPTV services with mobile communications, fixed telephone and internet services appears quite sizeable.

To test the reliability and validity of the constructs, we calculated factor loadings, using orthogonal Varimax rotation. Items loading more than 0.4 on multiple factors were eliminated. All variables had a coefficient of reliability of 0.7 or greater and were, therefore, significant.

We, then, performed a simple regression analysis and a moderated regression analysis, using the independent variables influencing the acceptance of FMC services, 'usefulness' and 'economical pricing,' and the moderating variable, 'customer loyalty.' The results are given in <Table 1> below. <Panel A> lists the results of the moderated regression analysis performed using 'usefulness' as the independent variable and 'customer loyalty' as the moderator. As for <Panel B>, it provides the results of the moderated regression analysis performed using 'economical pricing' as the independent variable, and 'customer loyalty' as the moderator.

As can be noted in Panel A, the perceived usefulness of FMC services proved to have a positive relationship with consumers' acceptance of them. What this says is that the greater the perceived usefulness of FMC services, the stronger consumers' intention to use them will be. The interaction term also had a positive value. Meanwhile, test 3 having a higher explanatory power than test 1 vis-à-vis the model, loyalty appears to indeed play the role of a moderator in the relationship between the usefulness of FMC services and consumers' acceptance of them.

Using the same method, we tested, this time, the influence of 'economical pricing' on the acceptance of FMC services. As can be seen in the results listed in Panel B, economical pricing had a positive relationship with consumers' intention to use FMC services. What this says is that the more economical the FMC services, in other words, the more reasonable their prices, the higher consumers' intention to use them. The interaction term also had a positive value. Test 3 having higher explanatory power than test 1 vis-à-vis the model, loyalty appears to indeed play the role of a moderator in the relationship between the economical pricing of FMC services and consumers' acceptance of them.

An additional survey was conducted on those respondents who are already using a FMC service to measure their level of satisfaction. The satisfaction of the respondents with FMC services was measured concerning price and composition of service bundles using a Likert 7 scale; the results showed that the level of satisfaction was higher with the composition of service bundles than with their prices. Further, 46% of respondents in this survey indicated an intention to continue to use the FMC services, while a quite high percentage of them (62%) expressed the intention to switch providers. This suggests that even though users are satisfied at least to a degree with FMC services they are currently using, they are not as satisfied with their current providers. What this implies for telecom operators providing FMC services is that they must make efforts to improve their customer service and the quality of their services.

Finally, an additional analysis was performed on the responses from the current users of FMC services to determine which of the service components are likely to be the key components of FMC bundles in the future. The most popular choice among respondents was mobile communications services, followed by internet access services.

4. Conclusion

This study was an investigation of the current status of FMC services in Korea, promising services for future FMC bundles and consumers' acceptance behavior vis-à-vis FMC services. The results and implications derived from them are as follows: First, consumers' acceptance of FMC services was positively (+) affected by their perceived usefulness and economical pricing. The results also showed that customers' loyalty toward a provider played the role of a moderator in this relationship of influence; thus, confirming the related hypothesis proposed at the outset of this study.

Second, the analysis of usage profile with regard to FMC services revealed that the most popularly-used service bundle was the bundle coupling internet access and internet telephone services (27%), followed by the bundle of internet access and fixed telephone services (12%); this indicates that fixed service-based bundles are the preferred type among users, at least for the time being. In other words, service bundles integrating fixed and wireless services are yet to take hold. Meanwhile, current users of FMC services were more satisfied with the composition of their service bundle than with the price (appropriate pricing), and were generally more satisfied with telecom services they were using than were those who not currently using FMC services.

Third, the service components likely to become core components of FMC service bundles in the future, according to respondents surveyed, were mobile communications and internet access services, and the preferred type of service bundles combined mobile communications and internet access services with internet TV.

This study is significant in that it provides insight into the current state of penetration of FMC services, a new revenue model in Korea's telecom market, predicts service components that are likely to become core components of FMC bundles in the future, and determines whether and how consumers' acceptance of these services are influenced by their usefulness and price. It also examines the role customer loyalty plays in this relationship. The results of this study should be useful to telecom operators putting together their FMC service bundles and developing pricing policies to achieve greater competitiveness.

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