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THE ANTECEDENTS OF SWITCHING AND SWITCHING BACK BEHAVIOR IN THE MOBILE INDUSTRY

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Abstract. *In the smartphone industry, new product launches are faster than any other products. Consumers buy new products because of upgraded performance, new technologies, or variety seeking tendency, rather than product failures. Therefore, it is likely that customer who has once left will return. This study investigates the predictors of smartphone users' behavior of switching platform or switching back to original platforms. Result shows that consumer demographics play an important role in switching back decision. Gender, smartphone mobile company, and the number of changing smartphones appear to be significant in the demographic variables. Indeed, anticipated regret is the strongest factor in switching back to their original platform. On the other hand, alternative attractiveness is weak factor for switching back. Finally, peer influence is much more important than media influence for switching back behavior.*
Keywords: Smartphone platform, Switching behavior, Switching-back behavior, Mobile industry

1. **Introduction.** Smartphones offer novel ways of communication, information processing and entertainment. Therefore, they have become a common device among consumers, and the smartphone market has grown exponentially. Innovation in information systems (IS) increasingly occurs on the basis of digital infrastructures or platforms. Such platforms compete to attract not only application developers but also end users [1]. The extant literature extensively deals with how to attract application developers [2]. However, few studies exist on how consumers make decisions on switching platforms and what makes consumers to switch back to their original platforms.

Today, the biggest platform providers, Google and Apple, leverage their ecosystems to attract and maintain consumers [3]. These platform providers have created their own ecosystems with different approaches to attract consumers. Indeed, the platform decision making plays an important role in smartphone purchase decision making as well as predicting future ecosystem.

The purpose of this study is to investigate the predictors of smartphone users' behavior of switching back to their original platforms. While repurchasing of a product or service generally occurs by choosing from many alternatives, only two options exist in the smartphone platform. Therefore, this research defines switching back behavior as returning to original platform after switching to a different platform. Little research exists on switching back related issues. This study focuses on switching back behavior in terms of technology related issues.

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Under the situation of technology related switching behavior, individual's beliefs about technology use and switching are influenced by two dominant sources of influence: individual factors and contextual factors. Individual factors are already examined in a variety of studies using technology acceptance model. Contextual factors, however, are not well understood under individual's decision making process [4].

This study grounds on contextual and emotional aspects identified by Tronvoll [5] who had mainly studied the complexity of the complaint and changing behavior process. Because individual's behavior related technology usage under the contextual aspects occurs during the information search process, the social environment can be separated in sources of information influence [6]. This study considers the media influence as an external source of information and peer influence as an interpersonal source of information.

The classic external source of information refers to mass media, reports, and other impersonal information by adopters in making a rational acceptance decision [7]. Generally, consumers engage in external information search by reading about products or services in mass media. Media influence from external information search has an impact on individual behaviors [8,24], Bronner and Hoog [9] insist that media influence plays an important role in information search process.

Interpersonal information refers to word-of-mouth influence by friends, colleagues, superiors, and other prior adopters known to the potential adopters. When making product or service decisions, customers tend to rely on word-of-mouth opinions of others more than their own decision-making process. Fulk [10] empirically found that the extent to which salient others view technology use as valuable has a positive influence on one's own perceptions of usefulness. Since using smartphone can be shown by other people, changing or switching is favored when the peers have higher switching tendencies. Therefore, we can apply interpersonal influence to switching back behavior.

Since computer based device or application provoked positive and negative emotions [11], this study adopted the alternative attractiveness as positive emotional factor and anticipated regret as negative one.

Lu et al. [12] defined alternative attractiveness as the customers' estimate of the likely satisfaction available in an alternative service provider such as platform. Prior research emphasizes that alternative attractiveness is an important factor when customers consider switching, which increases the likelihood of switching service provider. Therefore, this research attempts to examine the influence of the attractiveness of alternatives on customer switching back behavior.

Regret generally refers to a negative emotion as a result of decision-making under uncertainty [13]. When outcome information is not readily available, people mentally generate hypothetical scenarios about the possible outcomes of different choices, or counter factual thinking. Moreover, the ecosystem in smartphone would be damaged as the network effect fails to happen due to users' anticipated regret for the future. Therefore, this study expects that anticipated regret would also influence the way user makes a switching back decision.

Finally, demographic characteristics are central to predicting individual switching behavior [14,15]. This paper analyzes the effect of gender, age, using mobile communication service company, and the number of changing smartphones on users' switching and switching back behavior.

For current research, the following research question has been formulated. What are the factors that affect the smartphone users' behavior towards switching back to their original smartphone platform?

Section 1 concisely reviewed the literature and proposed research question. Section 2 shows the research methodology for solving the proposed research question. Then, Section 3 presents the results and findings. The paper concludes with a discussion of the

theoretical and practical implications of our findings in Section 4. It also refers to the contribution and limitations of this research.

2. Research Methodology.

2.1. Data collection.

The purpose of this study is to examine which predictors of smartphone users' make platform switching or switching back behavior. A survey and interview are employed to test the proposed research question. The research target of this study was the smartphone users. We conducted several procedures for data collection.

First, a pilot study was conducted with 40 undergraduate students to assess and gauge the clarity of the questions. The participants provided detailed feedback through interviews. Based on this feedback, we reworded some items and reorganized the instrument layout. Next, we conducted a main survey. Specifically, we adopted a face-to-face survey that an interviewer directly asked respondents' platform type as well as manufacturing company. This method is useful to gather reliable response as well as avoid non-response.

A total of 290 samples were collected. After discarding the incomplete questionnaires, the usable final sample was 254. Table 1 describes the respondents' demographic statics.

Table 1. Respondents' profile

Variables		#	%
Gender	Male	156	61.3%
	Female	98	38.7%
Platform Type	Android	151	59.6%
	iOS	103	40.4%
Mobile Communication Service Company	SKT	132	52.0%
	KT	58	22.8%
	LGU+	64	25.2%
# of Smartphone (so far)	1st	8	3.0%
	2nd-3rd	126	49.7%
	4th-5th	88	34.8%
	over 6th	32	12.6%
Age	20-30	117	46.1%
	31-40	44	17.3%
	41-50	48	18.9%
	over 51	45	17.7%

2.2. Methodology and measurement.

This paper conducted an empirical analysis according to the influencing variables based on Tronvoll [5] who had mainly studied changing behavior process. Gender and age in the demographic characteristics were collected first. The mobile communication service company and the number of changing their own smartphones were adopted as smartphone usage characteristics. Third, media influence, peer influence, anticipated regret and alternative attractiveness were adopted as contextual and emotional aspects.

Based on actual switching behavior, categorizing people as switching behavior or switching-back behavior is clear. In order to keep the analysis results comparable between the groups, this study classifies the persons who switch their smartphone platform into two categories: the 'switching behaviorer', who switched the smartphone platform from Android (or iOS) to iOS (or Android), and the 'switching-back behaviorer', who came back to their original platform.

In general, discriminant or regression analysis would be used for identifying relevant variables and predicting the future occurrence. However, these methodologies could not

apply binary variables such as switching and switching-back behavior. Therefore, the most practical tool for analyzing data with dichotomous dependent variables is logistic regression. For instance, Laukkanen [16] advocated the use of logistic regression in prediction research settings such as the adoption versus rejection decision-making to provide in-depth viewpoints.

In particular, this study uses confirmatory factor analysis to test the convergent and discriminant validity of the continuous variables such as media influence, peer influence, anticipated regret, and alternative attractiveness. The measurement model indicates a good fit with the data, with $\chi^2 = 464.23$, df = 198, GFI = 0.97, AGFI = 0.90, CFI = 0.89, RMSEA = 0.140. Standardized factor loadings and composite reliability values support convergent validity. The results also support discriminant validity, as the square root of AVE is greater than the correlation with other constructs (see Table 2) [17].

Table 2. Measurement constructs

Construct	Factor Loading	Item	Mean	s.d.	Cronbach α	AVE	CR
MI	0.893 0.866 0.721 0.763	4	3.71	1.11	0.793	0.881	0.664
PI	0.739 0.905 0.826 0.885	4	3.27	1.31	0.897	0.923	0.75
AR	0.604 0.852 0.834 0.772	4	3.55	1.38	0.842	0.887	0.671
AA	0.900 0.813 0.741 0.755	4	2.98	1.41	0.854	0.88	0.658

3. **Findings.** This study empirically examined which factors affect switching back behavior compared to switching behavior. A likelihood ratio test was conducted to test the significance of dependent variables. A highly significant χ^2 ($p < 0.001$) indicates a good fit with the data in the model (See Table 3).

This study considers MI and PI as contextual aspects, and AA and AR as emotional aspects to figure out the proposed research question. The results show that every construct has a significant effect. Specifically, AR ($p < 0.001$) is the strongest factor of making users' switching back intention, being the odds ratio for 14.09 (= 1/0.071). Moreover, the beta value is negative, and this means that the lower AR they perceive, the higher the possibility is in switching back to their original platform. The second most important attribute is AA ($p < 0.001$, Exp(beta) = 11.197). In addition, PI ($p < 0.001$) is the next strong factor of users' switching back behavior. Meanwhile, MI ($p < 0.05$) is weak factor for switching back behavior.

As demographic characteristics, gender, smartphone mobile service company, and the number of smartphones changing experience significantly affects switching back behavior. Taking a closer look at the odds ratios, the results show that men are nearly three times as likely (Exp(beta) = 3.754) compared with women to switch back after switching their smartphone platform as positive estimated coefficient. Among mobile communication service companies, SKT users are more likely to switch back to the original platform

Table 3. Logistic regression results

Dependent Variable	Independent Variables	Beta	Standard Error	Wald χ^2	df	Sig.	Exp(B)
Switching Behavior vs. Switching Back Behavior	Gender (Male)	2.36	1.02	5.353	1	0.021	3.574
	AGE (20-30 years)			5.098	4	0.277	
	AGE (31-40 years)	1.27	6.60E+04	0.000	1	1.000	0.000
	AGE (41-50 years)	−9.23	1.96E+04	0.000	1	1.000	0.000
	AGE (51- years)	−28.78	1.47E+04	0.000	1	0.998	0.000
	COMM (SKT)			12.968	2	0.002	
	COMM (KT)	−4.13	1.15	12.968	1	0.000	0.116
	COMM (LGU)	−49.26	4.66E+03	0.000	1	0.992	0.000
	NUM (1st)			13.954	4	0.007	
	NUM (2nd-3rd)	−1.10	3.23E+04	0.000	1	1.000	0.000
	NUM (4th-5th)	−3.09	1.38	5.007	1	0.025	1.045
	NUM (6th-)	−4.59	2.16	4.527	1	0.033	8.898
	Media Influence	1.00	0.47	4.543	1	0.033	1.367
	Peer Influence	1.53	0.43	12.639	1	0.000	4.617
	Anticipated Regret	−2.64	0.74	12.705	1	0.000	0.071
	Alternative Attractiveness	2.42	0.73	10.910	1	0.001	11.197
	Constant	−18.75	3.45E+04	0.000	1	1.000	0.000
Likelihood Ratio				56.685	1	< 0.001	0.337
Cox & Snell R^2							0.481
Nagelkerke R^2							0.710
Classification Percentage							87.4%

than KT users, the odds ratios being 0.116. Subsequently, there was no difference in switching and switching back behavior between users that have changed phones first time and second/third time. However, users that have changed phones 4th-5th times and over 6th times are more likely to switch back to their original platform, the odd ratios being 1.045 and 8.898 respectively. This means that the users with many changing experiences have a higher possibility to switch back to their original platform.

4. **Discussion and Conclusions.** This study's goal is to investigate predictors of consumer switching back behavior in smartphone platform. This is mainly because smartphone consumers make switching decision depending on smartphone platform types [18]. This study considers demographic variables as well as contextual and emotional aspects under technology related switching behavior.

First, consumer demographics play an important role in switching back decision. Gender, mobile communication service company, and the number of changing smartphones appear to be significant, while age is non-significant. Gender is one of the most studied consumer demographics in the switching decision context. Earlier literature suggests that men perceive activities as less risky [19]. One of the interesting points is that SKT has much more customers switching back to its platforms. Future research should focus on the reason for its high return of customers; whether SKT's marketing power is more effective or the population of SKT users is bigger than that of the other mobile companies.

When users change their smartphones more frequently, switching back behavior is more likely to happen regardless of the platform types. This is because the people who have much changing experience tend to have lower perception level about switching cost [20].

Moreover, they tend to show higher variety seeking tendency which refers to consumers' tendency to change their selection [21].

This study reveals that the emotional aspects such like AR and AA are stronger factors than the contextual aspects such as MI and PI in switching back to their original platform. The AR is the strongest factor in switching back to their original platform. The high anticipated regret people tend to have heightens future uncertainty [22]. Oh [23] concludes that the AR plays an important role in platform switching. However, this study finds that AA has relatively less influence in the context of switching back behavior.

On the contrary, PI is much more important than MI for switching back behavior. This means that the relative attractiveness toward the opposite platform overcomes future uncertainty. Indeed, when people make switching back decision, peer influence such as the social norms or interaction with friends/peer groups has much more important role compared to media effects such as advertising.

Recently, a number of users have switched their platforms or switched back to their original one as mobile market popularized smartphone. Thus, an interest rises, from both managerial and theoretical perspective, to understand what makes "the switchers" switch back to their original platform. In this paper, the results suggest the mobile company, anticipated regret, alternative attractiveness, and peer.

This paper is different from existing research in that it focuses on the switching back behavior. However, this paper regards users switching from Android to iOS and users switching from iOS to Android as the same group. Thus, future research that categorizes them into separate groups is a valuable implication for providing each platform's ecosystem. Second, this study examines only a limited set of constructs and has some limitations not considering brand royalty and switching costs.

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