

# The Mediating Effect of the Flow Experience: Causal Model Analysis on the Effect of Users' Awareness of SNS Characteristics on the Acceptance of SNS

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## Abstract

The purpose of this study was to investigate the causal relationship regarding the influence of users' awareness of SNS characteristics on SNS acceptance. To determine the Causal model, exchange of opinion, formation of public opinion, and interactivity were used as the determinant factors of SNS which affect the usage intentions; then the suitability of the research model was verified. Moreover, the covariance structure modeling was carried out in order to verify the mediating effect of the flow experience. The result of the study, first, the user's awareness of the SNS characteristics - exchange of opinions, public opinion formation and interactivity in SNS had significant effect on the flow experience. Second, awareness of SNS exchange of opinion and interactivity factors had a significant impact on SNS acceptance. Third, the awareness of SNS exchange of opinion and interactivity showed a partial mediating effect on SNS acceptance. Fourth, the awareness of SNS public opinion factor showed a complete mediating effect on the SNS acceptance. These results are expected to address the question of what factors to emphasize for the communicators involved in improving SNS acceptance.

**Keywords:** Exchange of Opinions, Flow Experience, Interactivity, Public Opinion, SNS Acceptance and Usage

## 1. Research Background and Purpose

The mechanism of knowledge diffusion in online space has been changing beyond the temporal and spatial limitations of the existing exchange of knowledge due to the recent developments in the internet environment. This trend has allowed the public to become the main agents of knowledge that produce and spread knowledge directly whereas, previously, a small number of producers of knowledge controlled public opinion; and the public accepted the production of knowledge by these opinion-providers as passive agents. The emergence of online public sphere means that the concept of public sphere coined by Jurgen Habermas has further expanded to the online space. In particular, in the global media ecosystem, the evolution of SNS is breaking down the boundaries between media and changing the communication behaviors mediated by these into a new form. SNS is a space in

which the citizens express their opinions and mass media distributes new and share information; it also serves the function of gathering public opinion as a public sphere. In addition, it expands the realization of social networks between individuals online and performs an effective role of media in the propagation of social issues and discourse formation. Therefore, in the recent communication sector, there has been active research in various aspects ranging from exploratory research to empirical research on SNS. However, in spite of the social impact of the social networking services, systematic studies and discussions have been insufficient. For these reasons, determining the effect of SNS factors on SNS acceptance; and determining the influence on acceptance by using the characteristics of user experience as the media; this research will be considered to have significance. Accordingly, the present study sought to analyze the influence of the participants'

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awareness of SNS Characteristics on SNS acceptance. The specifics of the objectives are as follows: first to evaluate the influence of users' awareness of the SNS characteristics (exchange of opinions, public opinion formation, and interactivity) on the flow experience; second, to investigate the users' awareness of SNS exchange of opinion, public opinion formation, and interactivity factors on SNS acceptance; thirdly, to determine the mediating effect of the flow experience on SNS acceptance. That is, to determine how the users' awareness of the SNS factors mediate the flow experience and influence SNS acceptance.

## 2. Research Model and Hypotheses

### 2.1 SNS Opinion Exchanges

SNS is defined as communication and relationship building through open network based on the technical mechanisms which enable private or public information to be seen between the users<sup>1</sup>. In this respect, SNS not only facilitates mutual contact between users but also help to maintain and strengthen social relationships based on its characteristics of efficiency, immediacy, and mobility; furthermore, it has been perceived as two-way communication media which enable exchange of information and participation by its users online<sup>2,3</sup>. In the early days of SNS, it was used as an easily accessible media for personal use rather than a social-political media, however, the proliferation of smartphones enabled accessibility anywhere and anytime; it enabled the consumers to share information and everyday lives more easily. Social media is different from the traditional mass media in that it is perceived as a media with strong characteristics such as approachability, usefulness, interactivity; and users are expressing their ideas through these social media; moreover, they are displaying aspects of civic engagement in the public domain by expressing their thoughts and opinions<sup>4</sup>. The usefulness and influence of social media in various fields has come to the fore social-politically; there has been further increase in academic interests accordingly. Ryu and Lee<sup>5</sup> have revealed that people with high political participation form a high-affinity network in micro-blogs in the discussion of public sphere of the micro-blogs. According to the analysis of political discourse exchanged among users of Twitter, Shin and Woo<sup>6</sup> found that the users frequently utilized Twitter to share political information.

SNS exchanges in this study was defined as the expression of personal opinion formed in relationships with other people and the degree of awareness regarding public sentiment; it was hypothesized/deduced that the awareness of opinion exchange which is an SNS characteristic, will influence/impact SNS acceptance.

Hypothesis 1: The awareness of the SNS opinion exchange characteristic will have a positive influence on the flow experience.

Hypothesis 2: The awareness of the SNS opinion exchange characteristic will have a positive influence on the acceptance of SNS.

### 2.2 SNS Public Opinion Formation

SNS has more influence than the existing mass media such as the press and broadcasting which played the role of the gate keeper. On the other hand, an individual possesses primal force that could be far-reaching by being able to enact the roles of the opinion-leader, person of influence, opinion-creator; such influence have been demonstrated through many examples via national and international social networking services.

In fact, the existing public opinion related theories have explained the public opinion process as a stage theory in which the issues which become controversial through mass media go through a discussion process between the members of the society in the formation of public opinion. The stage theory in the formation of public opinion, expressed this as a one-time surge process; the process in which the issues made controversial by the press spread throughout the public only to gradually dissipate to extinction over time<sup>7</sup>. Recently, in a study regarding the diffusion process of public opinion through individual interaction in SNS participation diffusion by Watts and Dodds<sup>8</sup>, emphasized the density of the public opinion diffusion process. According to this study, if the network density is high, individuals can interact with diverse individuals effortlessly while actively expressing their opinions. Furthermore, it was determined that a large number of majority network structures that are easily influenced by minority opinions need to be established in order for public opinion to spread rapidly; thus through social media, minority views can spread instantly. In addition, the scholars who have studied public opinion asserted that the awareness of public opinion trends have significant impact on forming and expressing personal opinions<sup>9,10</sup>. An individual's awareness of others' opinions is an essential component of public opinion and it's

crucial not only for participation in the individual's social environment but also a factor which affects his behavior and attitude<sup>11</sup>. In other words, the public sentiment at a given time that have been perceived as prevailing can affect changes in perception and attitudes; people are able to change their opinions by the opinions of others<sup>11</sup>; awareness of public opinion is influential in shaping the awareness of public issues or persons. Liu et al have revealed that the process by which public opinion is formed and diffused is also a process of selection and persuasion among individuals; attitudes can change through interaction with others who do the reporting and individuals can sometimes follow the majority opinion. In other words, the diffusion and the direction of public opinion are likely to vary depending on how rapidly individuals can interact with the others and respond to their opinions.

Therefore, upon considering the attributes of SNS, the following hypothesis 2 and 3 were determined based on the effect of the formation of public opinion factor on SNS acceptance:

Hypothesis 3: Awareness of SNS public opinion formation factor will have a positive influence on the flow experience.

Hypothesis 4: Awareness of SNS public opinion formation factor will have a positive influence on the acceptance of SNS.

### 2.3 SNS Interactivity

Interactivity has been receiving attention as a key component in online public opinion formation. Interactivity can be defined as "the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized"<sup>12</sup>. Interactivity has been used as the most important criteria in distinguishing the new media and the traditional media<sup>13,14</sup>. Heeter<sup>15</sup> considers interactivity to be the most important characteristic of multimedia and supplies six dimensions focusing on user control as an attribute of interactivity. The criteria for interactive media put emphasis on the following: the user has the choice and the user must exert effort; also users' responsiveness is possible, as well as adding information with ease; in addition, it facilitates interpersonal communication. While the theoretical construct of Heeter has emphasized user control, it includes additional choice of adding information and content;

the facilitation of interaction and interpersonal communication aspects in terms of content; and interactive aspects of information exchanges as well as communication exchanges.

In particular, when the interactivity of SNS is examined based on previous studies; the factors of immediate response and active exchange of information makes possible the inference that they are main components of interactivity. In this study, it can be inferred that interactivity which is the most important component of new media has a positive impact on the degree of SNS acceptance. Accordingly, the following hypothesis 3 and 6 were determined:

Hypothesis 5: Awareness of SNS interactivity factor will have a positive influence on the flow experience.

Hypothesis 6: Awareness of SNS interactivity factor will have a positive influence on the acceptance of SNS.

### 2.4 Flow Experience and Acceptance

Flow theory has been developed by Csikszentmihalyi<sup>16-18</sup> to explain the motive of consumer purchases and revisits, postponement of purchase in marketing. It refers to a state in which people are fully absorbed and immersed in their activities without being self-conscious which foster positive outcomes such as self-development and satisfaction<sup>19</sup>. The flow theory is used in diverse fields, and in particular, it has been known as a useful concept in describing the interaction between humans and the computer<sup>20</sup>. Moreover, the results of a number of studies have claimed to have found the flow even in computer-mediated virtual environment<sup>21,22</sup>.

Hsu and Lu<sup>23</sup> have defined flow as a multidimensional construct concentration such as control, curiosity, intrinsic interest, and pleasure; and applied them to online games; flow theory is being studied in various aspects within the nation and abroad<sup>24,25</sup>. For example, Davis, Bagozzi and Warshaw<sup>26</sup> have asserted that that the flow factors have a significant influence on the usage intentions of the system; in the study regarding online consumer behavior, Koufaris<sup>27</sup> have claimed that the perceived usefulness and enjoyment of shopping influenced the consumers' intentions to make return visits. In addition, there are studies which show that the flow experience affects the users' satisfaction regarding usage.

Accordingly, on the basis of the existing research outcomes, the flow experienced by the user regarding SNS as an interpersonal communication media used to form social networks, and perform interpersonal interaction

was deduced as a very important variable in the acceptance of SNS communications. Furthermore, SNS communication was thought to play an important role as mediated effects on the acceptance of SNS communication. For these reasons, the following hypotheses 7, 8, 9 and 10 were determined:

Hypothesis 7: flow experience of the user will have a positive influence on the acceptance of SNS.

Hypothesis 8: Awareness of SNS opinion exchange factor will influence SNS acceptance by mediating the flow experience.

Hypothesis 9: Awareness of SNS public opinion formation factor will influence SNS acceptance by mediating the flow experience.

Hypothesis 10: Awareness of SNS interactivity factor will influence SNS acceptance by mediating the flow experience.

In addition, we have determined the research model based on the assumptions presented above (Figure 1).

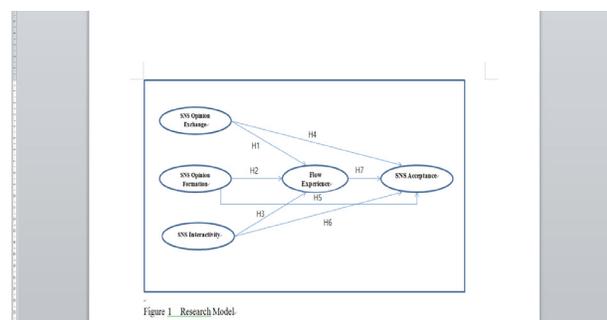


Figure 1. Research Model.

## 3. Research Methodses

### 3.1 Subject of Study

This study sought to investigate the influence of users' awareness of SNS characteristic factors on acceptance of SNS. A survey was conducted for this purpose for approximately 3 weeks from October 13, 2014 to October 30, 2014. The survey targeted college students, who often use SNS regarding their SNS usage. A total of 287 questionnaires was collected and used in the final analysis. There were 125 male (43.6%) and 162 female (56.4%) respondents in terms of gender distribution.

### 3.2 Measurement Tools

#### 3.2.1 SNS Exchanges

This study considered SNS as a space for information exchanges and expressions of opinions and a type of communication service which facilitates opinion formation and discourse. In this study, in order to evaluate the SNS opinion exchanges, 6 scale items from the studies of Kim, Choi, Ahn, and Lee<sup>28</sup> were used. The content of the questions for the survey were as follows: 'I'm able to talk openly on SNS to people around me; "Before I talk on SNS, I check to see whether the opinions of the people around me are similar or the same as my opinions on SNS; People exchange their opinions honestly on SNS; I am willing to change my opinions when most of the information on SNS is different from my thoughts; I think that most opinions on issues which are discussed through SNS reflect the opinions of the majority of people". The survey was evaluated using five-point Likert-type scale (1 point = not at all, 5 = Strongly Agree) for each question. The reliability of the scale appeared as Cronbach  $\alpha$  coefficient 0.645.

#### 3.2.2 SNS Public Opinion

In order to evaluate the SNS opinion formation, 3 survey questions from the studies of Kim, Choi, Ahn, and Lee<sup>28</sup> were used. The content of the questions for the survey are as follows: "Majority of people keep silent on SNS; Exchanges of opinions on SNS are led by a very small number of people".

A scale that was used reflected the opinion formation characteristics of SNS regarding the awareness of perceived silence and recognition of minority-led opinions. The survey was evaluated using five-point Likert-type scale (1 point = not at all, 5 = Strongly Agree) for each question. The reliability of the scale scored Cronbach  $\alpha$  coefficient value of 0.529.

#### 3.2.3 SNS Interactivity

Interactivity can be defined as "the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized"<sup>12</sup>. In this study, 3 survey questions from the study of Choi, Park, and Lee<sup>29</sup> were used. Each item was measured using a five-point Likert-type scale. The reliability of the scale was interpreted to be favorable with a Cronbach  $\alpha$  coefficient value of 0.784.

#### 3.2.4 Flow Experience

The flow refers to a state in which people are fully absorbed and immersed in their activities without being self-conscious. In other words, it is a state or feeling in which one is mentally, psychologically, physically, fully absorbed. In this study, the flow experience refers to the flow experienced while using SNS, and the experience of positive feelings such as that of self-improvement and satisfaction. Four items from the studies of Trevino and Webster<sup>30</sup> and Agarwal and Karahanna<sup>31</sup> were used to measure the flow experience; “I enjoy and have fun while using SNS; I become inquisitive or curious while using SNS. I become fully absorbed while using SNS”. Each item was measured using a five-point Likert-type scale. The reliability of the scale was interpreted as being favorable with a Cronbach  $\alpha$  coefficient value of 0.806.

### 3.2.5 Acceptance of SNS

Acceptance refers to intentions to use and recommend SNS. In this study, 3 items from the studies of David<sup>32</sup> and Venkatesh and Davis<sup>33</sup> were used. Each item was measured using a five-point Likert-type scale. The reliability of the scale was interpreted as being favorable with a Cronbach  $\alpha$  coefficient value of 0.822. To sum up, a comprehensive look at the result of the analysis on the reliability of the measurement tool in this study is as shown in Table 1.

### 3.3 Data Analysis

SPSS/PC + Windows 20.0 program was used in this study for the analysis of the collected data. To verify the validity of SNS opinion exchange and public opinion formation, and interactivity factors, the flow experience and SNS acceptance scale, exploratory factor analysis was conducted. Exploratory factor analysis method was conducted utilizing principal component analysis and VARIMAX rotation system. To analyze the reliability of each scale, internal item reliability (Cronbach $\alpha$ ) was utilized. In analyzing the relationship between the variables, Amos 18.0 program was used covariance structure analysis.

## 4. Results

The purpose of this study was to set up a causal relationship research model for the influence on SNS acceptance through the flow experience of SNS factors and to verify its validity. Amos 18.0 program was used to conduct covariance structure analysis for this. Prior to the validation of the research model, the fit of the model is shown in Table 2.

**Table 1.** Reliability analysis of the measurement tools

Measurement Tools		Cronbach $\alpha$
SNS Characteristics	SNS Opinion exchange	.645
	SNS Opinion formation	.529
	SNS Interactivity	.784
Flow experience		.806
SNS Acceptance		.822

The test results showed that the research model fit indices were AGFI = .897 and NFI = 0.881 showing that this model did not satisfy the acceptance criteria. Accordingly, Modification Indices removed SNS acceptance item 1 which was found to be a misfit variable due to a large measurement error, thereby, improving the fit of the research model. As a result, the modification indices of the modified final model were found to satisfy the overall acceptance criteria. Thus, a modified model was obtained through the modification process shown above; this was adopted as the final model; and the final model derived for hypothesis testing can be seen in Figure 2. The results of the hypotheses proposed in this study based on the analysis results of the final model are the same as shown in Figure 2, and Table 3. Hypothesis 1 “The awareness of the SNS opinion exchange characteristic will have a positive influence on the flow experience” was verified. As a result, the standard path coefficient between two variables was 0.519 ( $t = 2.842, p < .01$ ) and it was found to have positive (+) influence. Therefore, Hypothesis 1 was adopted. Hypothesis 2: “Awareness of SNS public opinion formation factor will have a positive influence on the flow experience” was verified. As a result, the standardized path coefficient between the two variables was 0.390 ( $t = 3.041, p < .01$ ) and it was found to have a significant influence. Therefore, Hypothesis 2 was adopted. Hypothesis 3: “Awareness of SNS interactivity factor will have a positive influence on the flow experience” was verified. As a result, the standard path coefficient between two variables was 0.280 ( $t = 2.973, p < .01$ ) and it was found to have a significant positive influence. Therefore, Hypothesis 3 was adopted. Hypothesis 4: “The awareness of the SNS opinion exchange characteristic will have a positive influence on the acceptance of SNS” was verified. As a result, the standard path coefficient between two variables was

**Table 2.** Comparison of the research model and the final model fit indices

Fit Indices	$\chi^2$	df	P	RMR	RMSEA	GFI	AGFI	NFI	CFI	TLI
Research Model	179.435	94	.000	.045	.056	.929	.897	.881	.939	.922
Final Model	106.381	80	.026	.041	.034	.953	.929	.918	.978	.971
Suggested Values			more than 0.5	at least 0.5	Below 0.8	more than 0.9				

0.417 ( $t=2.186, p<.05$ ) and it was found to have a significant positive influence. Therefore, hypothesis 4 was adopted. Hypothesis 5: “Awareness of SNS public opinion formation factor will have a positive influence on the acceptance of SNS” was verified. As a result, the standardized path coefficient between the two variables was  $-0.223$  ( $t = -1.731, p> .05$ ) and it was found that it did not have any significant influence. Thus, Hypothesis 5 was rejected. Hypothesis 6: “Awareness of SNS interactivity factor will have a positive influence on the acceptance of SNS” was verified. As a result, the standardized path coefficient between the two variables was  $0.258$  ( $t = 2.617, p <.01$ ) and it was found to have a significant influence. Therefore, Hypothesis 6 was adopted. Hypothesis 7: “The flow experience of the user will have a positive influence on the acceptance of SNS” was verified. The analysis revealed that the path coefficient between the two variables was  $.563$  ( $t = 5.717, p <.01$ ) and it was found to have a significant influence. Therefore, Hypothesis 7 was adopted. The hypotheses 8 to 10 were to determine the mediating effects of the flow experience by verifying the effect of users’ awareness of SNS factors such as opinion exchange, public opinion formation, and interactivity on SNS acceptance by mediating the flow experience. To verify these mediated effects, this study made examinations based on the statistical significance of the path coefficient. The results were as follows. Hypothesis 8: “Awareness of SNS opinion exchange factor will influence SNS acceptance by mediating the flow experience” was verified. As a result of examining the mediating effect on the basis of statistical significance of the path coefficients, the effect of SNS opinion exchange factor on SNS acceptance obtained by the direct path standardized coefficient was  $0.417$  ( $t = 2.186, p <.05$ ) and found to be significant; the direct path standardized coefficients which affected the flow experience was

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0.519 ( $t = 2.842, p < .01$ ) and also found to have significant influence. Additionally, the effect of the flow experience on SNS acceptance obtained by the direct path standardized coefficients was 0.563 ( $t = 5.717, p < .001$ ) and it was found to show significant influence. Therefore, the hypothesis was shown to have partial mediating effect and adopted. Hypothesis 9: "Awareness of SNS public opinion formation factor will influence SNS acceptance by mediating the flow experience" was verified. As a result of examining the mediating effects on the basis of statistical significance of path coefficients, the effect of SNS public opinion formation factor on SNS acceptance determined by direct path standardized coefficient was -0.223 ( $t = -1.731, p > .05$ ) and was not considered significant; however, the direct path standardized coefficient of 0.390 ( $t = 3.041, p < .01$ ) was found to affect the flow experience as well as have significant influence. Furthermore, the effect of the flow experience on SNS acceptance was shown to be the direct path standardized coefficient of 0.563 ( $t = 5.717, p < .001$ ) and

moreover, the direct path standardized coefficient of 0.280 ( $t = 2.973, p < .01$ ) was found to affect the flow experience as well as have significant influence. Furthermore, the effect of the flow experience on SNS acceptance was shown to be the direct path standardized coefficient of 0.563 ( $t = 5.717, p < .001$ ) and was determined to have significant influence. Therefore, Hypothesis 10 was confirmed as having a full-mediating effect and adopted.

## 5. Conclusion and Discussion

With the proliferation of social networks, its influence is being discussed in various areas. This study has sought to understand the factors influencing the degree of acceptance of the social network services, and identify the influence of the flow experience of the user on SNS acceptance. To this end, although Hypothesis 5 "Awareness of SNS public opinion factor will have influence on the acceptance of SNS" among the 10 hypotheses of the present study

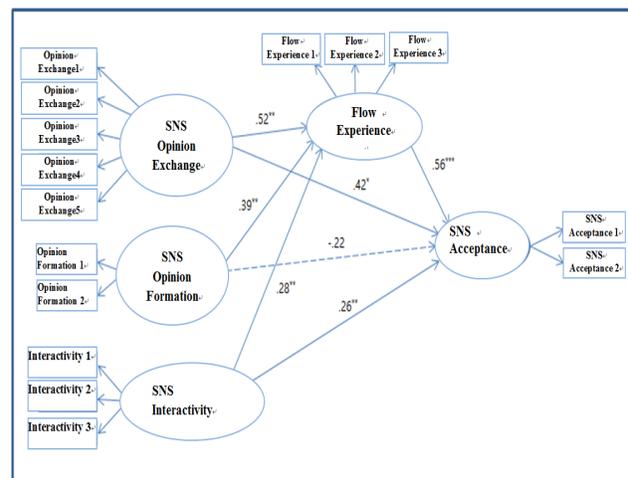
**Table 3.** Hypothesis testing results

Channel			Estimate	S.E.	C.R.	p	Notes
Flow experience	<---	SNS Opinion exchange	.519	.182	2.842	.004	Accept
Flow experience	<---	SNS Opinion formation	.390	.128	3.041	.002	Accept
Flow experience	<---	SNS Interactivity	.280	.094	2.973	.003	Accept
SNS Acceptance	<---	SNS Opinion exchange	.417	.191	2.186	.029	Accept
SNS Acceptance	<---	SNS Opinion formation	-.223	.129	-1.731	.083	Reject
SNS Acceptance	<---	SNS Interactivity	.258	.099	2.617	.009	Accept
SNS Acceptance	<---	Flow experience	.563	.098	5.717	***	Accept
SNS Opinion exchange → Flow experience → SNS Acceptance			.143 (mediated partially)				Accept
SNS Opinion formation → Flow experience → SNS Acceptance			.104 (mediated completely)				Accept
SNS Interactivity → Flow experience → SNS Acceptance			.136 (mediated partially)				Accept

was ascertained to have significant influence. Therefore, Hypothesis 9 was confirmed as having a full-mediating effect and adopted. Hypothesis 10: "Awareness of SNS interactivity factor will influence SNS acceptance by mediating the flow experience" was verified. As a result of examining the mediating effects on the basis of statistical significance of path coefficients, the effect of SNS interactivity factor on SNS acceptance obtained by direct path standardized coefficient was 0.258 ( $t = 2.617, p < .01$ ) and it was considered to have significant influence;

was shown to be statistically not significant thus rejected, the remaining hypotheses were shown to be statistically significant thus accepted. Accordingly, the results and the implications of this study are summarized as follows. First, the awareness of the user regarding SNS opinion exchange factor was shown to have statistically significant influence on SNS acceptance. In other words, it signifies that the acceptance of SNS will be higher the more the users become aware of SNS opinion exchange factor. In addition, the awareness of SNS opinion

exchange factor was shown to have significant influence on the flow experience. That is, it can be interpreted that the more the user is aware of the SNS opinion exchange factor, the higher the flow of experience. Second, the awareness of SNS public opinion formation factor was shown to have statistically significant influence on the flow experience. In other words, the more the users are aware on SNS that public opinion formation is being achieved successfully, the higher their flow experience. On the other hand, the awareness of public opinion formation on SNS was not found to influence the acceptance of SNS. Third, users' awareness of SNS interactivity factor was shown to have statistically significant influence on the acceptance of SNS. That is, the higher the awareness regarding SNS interactivity, the higher the SNS acceptance. Furthermore, the awareness of SNS interactivity factor was shown to have statistically significant influence on the flow experience. That is, the more the awareness regarding SNS interactivity increases, the higher their flow experience. Thus, increasing the awareness of SNS interactivity will enhance the users' flow experience and contribute to improving acceptance. Fourth, the flow experience of the users was found to have a significant effect on the acceptance of SNS. In other words, through the phenomena of when SNS users become fully absorbed and immersed in their SNS usage behavior without being self-conscious, the positive outcomes, with certain aspects of development and satisfaction ultimately have a positive impact on the acceptance of SNS. Therefore, by seeking out measures which allows the SNS users to become fully absorbed and focused, it will be possible to increase acceptance. Fifth, the users' awareness of SNS communication factors of opinion exchange and opinion formation, and interactivity mediated by the flow experience was found to influence the acceptance SNS. This is interpreted to mean that the flow experience has a mediating effect in regards to the users' SNS acceptance. The significance of this study was in its investigation of the influence of the users' awareness of SNS communication characteristics on the acceptance of SNS; and the confirmation of the mediating effects of the psychological factor - the users' flow experience. Furthermore, it is expected that this study will facilitate the resolution of questions regarding what SNS characteristic factors to emphasize in improving the acceptance of SNS; and hereafter provide implications for understanding the participation behavior of online public opinion through SNS.



“Solid lines(-)” show accepted hypothesis. Dotted lines(---)” show rejected hypothesis.

Figure 2. The Final Model.

## 5. Acknowledgement

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