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Sustainable Diffusion of Fashion Information on Mobile Friends-Based Social Network Service

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Abstract: This study presents a model integrating research on mobile social network services (SNS) and word-of-mouth (WOM) by examining the sustainable diffusion of fashion information via multidimensional effect factors, including the social relationship and sub-network structure characteristics of SNS. Implications for expanded research scope and methods are generated by applying social network analysis to information diffusion on friends-based SNS for sustainable development, which is connected to the social cascade phenomenon. This study investigates the relationship between the social network characteristics of subscribers and the sub-network structure characteristics of friends-based SNS and examines the effect of sub-network structure characteristics on fad-like behavior and WOM. We examine 311 people with experience in fashion information activities using friends-based SNS services for data analysis and perform frequency analysis, reliability and validity analysis, measurement model analysis, and path analysis using SPSS 20.0 and AMOS 20.0. This study furthers our theoretical and practical understanding of the network extension pattern in fashion information diffusion in mobile friends-based SNS. The study also points out the need for community network management and identifies the key factors in friends-based SNS, thus providing strategic guidelines for spreading fashion information effectively.

Keywords: sustainable diffusion; friends-based SNS; social cascade; information cascade; sub-network; fad-like behavior; word-of-mouth (WOM) intention

1. Introduction

Friends-based SNS (social network service) is a social connection formed through voluntary preference for a certain object, like a group of offline clubs. Its members frequently exchange information about the product category or brand in which they are interested and share ideas about its products. Friends-based SNS invites people connected by relationships—such as among family, friends, a club, or a company—to talk as a group in a specific space. Friends-based SNS differs from existing forms of SNS, which groups people based on their mobile phone number, e-mail address, or other identifier. This is a unique concept and is becoming increasingly popular with users, as many have complained about communication fatigue due to the excessive information disclosure that occurs in conventional SNS (at least in the Korean market).

The strong connections between communities affect product proliferation [1] and these social relationships, based on the bidirectional nature of information in mobile social networks, can expand rapidly and be sustained over time.

Studies on information diffusion in SNS have focused on the characteristics of the relationships between consumers in social networks and how these characteristics influence the diffusion of

information. Hirshleifer and Teoh [2] argue that information in SNS spreads rapidly during decision-making by imitating information in other nodes, causing the “information cascade” phenomenon. The behavior of a particular member in a social network becomes information, which then influences a neighbors’ behavior [3]; these phenomena can be explained as “fads”. In this sense, the social cascade phenomenon can be seen as a series of actions that changes one person by influencing another person and transforms both through a continuous process that affects other people [4].

At the center of SNS use is a desire for online group identity, which plays an important role in SNS knowledge sharing. Sustainable use is a crucial variable in the relationship between the formation of a users’ image and maintaining the network in SNS and it confirms the attitudes and decisions made by network members [5]. Thus, SNS is a service area characterized by the sustainable utilization of the social network environment and its functionality [6]. Companies can pursue sustainable marketing strategies by taking their products into account, rather than the individual consumer [7].

In this study, we empirically analyze the characteristics of social relationship and sub-network structures, which are influential variables in the information diffusion performance of the social cascade phenomenon in order to explain fashion information diffusion in friends-based SNS, an issue heretofore unexplored in the literature. This study examines the diffusion of fashion information in friends-based SNS as a multidimensional influencing factor that includes network characteristics and proposes a research model combining network research and SNS word-of-mouth (WOM) research.

We propose a research framework concerning the role of fashion information diffusion through these influencing relations, which have formed basic social capital and a social network based on common goals and interests. A friends-based SNS can be developed as a model of information diffusion. The possibility that a group will become more cohesive and follow similar attitudinal or behavioral patterns increases if the group members have similar values or cultural backgrounds, such as in the formation of a friends-based SNS. Social intelligence is said to constitute the process of collecting information formed and shared through active and free communication among group members [8]. As the social interactions between consumers based on relational preferences increase, new perspectives on sub-network structures and the social relationships influencing the purchase intentions of group members will become increasingly meaningful in both research and practical terms. This study also presents a model integrating research on sub-networks and mobile WOM by examining the diffusion of fashion information as a multidimensional influencing factor, focusing on the sub-network characteristics of friends-based SNS in Korea. The study attempts to extend the scope and methodology of current research by applying social network analysis to the investigation of sub-networks in SNS fashion information diffusion.

The objectives of this study are as follows. First, various approaches have been attempted to examine Internet relationships through network theory. Social characteristics are important variables in the mobile SNS environment, particularly in the social environment related to human influence [9]. Social connectivity in the mobile environment increases relationship commitment and trust. In addition, various levels of access must be examined to understand the effects of online-connected relationships, including network configuration, network size, network range, contact frequency, bond strength, connection density, the nature of the network, the history of the network, and the resources available in the network [10]. Smartphone users claim that social pressure such as in using SNS for smooth communication with other users promotes the bandwagon effects leading to acceptance as well as herd behavior [11]. Thus, studying the network characteristics represented by friends-based SNS is very important for understanding the causes of successful information diffusion from the viewpoint of social connectivity because strong tie leads to an intention to act on cohesion [12]. Carron [13] has defined cohesion as “the tendency for a group to stick together and remain united based on its common goals and objectives.” This study approaches the structural characteristics of SNS social relationships from the social network viewpoint. Friends-based SNS contains information that is used to recommend information experienced by consumers to others and the SNS information characteristics experienced by one consumer will affect other users connected through the network-based social

network. Furthermore, because people with similar interests or inclinations are more likely to buy similar products in similar environments, information communicated through SNS has a positive impact on consumers [14]. This suggests that information providers can improve the efficiency of information retrieval for consumers by recommending attractive products in SNS.

Second, members of a sub-network connected by strong ties will share characteristics distinct from other sub-network members. We extract the attributes of sub-networks used to spread fashion information within a large network based on this commonality. Han et al. [15] proposed that not only these individual characteristics but also the sub-networks' characteristics are important for spreading information. They empirically examined how the characteristics of these sub-networks affect the initial diffusion of information. In addition, people who share opinions or express agreement with others about products or services they have purchased form a kind of community, by which its members are continuously affected [1]. Regarding the relational nature of the sub-network's nodes and links, Granovetter [16] found that the more the time spent, the more emotional intensity, intimacy, and reciprocal service grow, the stronger the tie becomes. Song and Hwang [17] also examined the relationships between members in a fashion network and highlighted the importance of the structural characteristics of the network for identifying the fashion information movement path.

Third, this study aims to explain the fad-like behavior and WOM intention in the acceptance of new technologies through the social cascade phenomenon. Watts [18] modeled the causal factors in this cascade by linking it with the threshold at which the individual accepts information via the influence of others during information diffusion. By its nature, SNS is used via networking with other users; thus, users with high SNS involvement are likely to produce service diffusion by generating a positive WOM effect on the people around them.

Overall, we investigate the relationship between the social relationship characteristics of friends-based SNS and sub-network structure characteristics and examine these characteristics' effects on fad-like behavior and WOM intention. This study furthers the research that takes a social psychological perspective on SNS social networks and sub-network structures affecting purchase intentions, an issue that becomes more important as the social interactions between consumers based on preferences increase. It also presents an integrated structural model of consumption intention behavior formed through these influencing relations. This study also adds to the e-commerce and consumer behavior literature by examining how the social cascade phenomenon affects mobile friends-based SNS in terms of individuals' behaviors and sustainable development.

The rest of the paper is organized as follows. We review the relevant literature and explain the theoretical background of the study in Section 2. We present the study's research methods and procedures in Section 3. Then, we present the research results and discuss the findings in Section 4. Finally, we conclude the paper with a discussion of its research implications and possible future research directions in Section 5.

2. Theoretical Background

2.1. Friends-Based SNS

Many fashion companies are using community networking to publicize their products and achieve successful information diffusion. Information shared through well-formed networks is maintained and spread through social networks formed by individual social relationships [19]. This diffusion is happening more rapidly in Korea, a cultural environment where group identity is strong, especially for fashion products featuring collective diffusion characteristics known as "fads" [20]. Choi et al. [21] analyzed Korean trends in 2017 and found that the desire to avoid deficiency was much stronger than the desire for growth in the country. He also suggested that the biggest part of this value of avoiding deficiency was the desire for self-esteem, leading Korean consumers to be highly likely to communicate in a way that meets the collective desire for self-worth.

Recently, SNS has been experiencing explosive growth in its user base due to the rapid growth of the smartphone market. This huge user base is experiencing a complementary phenomenon that is leading to continuing innovation in SNS services. In addition, while the motivation to use early SNS was centered on exchange among close friends and self-expression, the use of SNS has been expanded to include the communication of social and informational motivation. Thus, the pattern of SNS use is changing based on such user motivation [22]. Based on the relationships between users' acquaintances, SNS has emerged as a new business model with the ability to create multiple groups such as family members, friends, clubs, and companies. As such, there is an increasing tendency to differentiate SNS by community elements based on pure friends-based form [23].

Certain groups of consumers linked to these friends-based SNS (e.g., Naver's Band) are likely to share similar consumer inclinations and user characteristics, thereby facilitating effective market segmentation and target-market derivation for companies. Thus, effective communication activities such as viral marketing strategies can be developed by considering these target markets. Viral marketing can be facilitated by WOM or enhanced by network effects in general. Lee & Koo [24] can strengthen the power of viral marketing by accelerating the exchange of information and opinions through SNS. For this reason, many companies are using SNS as a tool to inform and promote information about their brands. Song et al. [25] also argued that SNS channels are being used as a tool to promote online word-of-mouth. As such, viral marketing involves selective consumer exposure and is strongly related to user evaluations and discussions of product functionality in meetings, clubs and other venues. It can thus enhance the advertising effect because the unique composition and purpose of each group formed within the platform of the friends-based SNS can be identified, the appropriate information can be provided, and shared issues can be disseminated. According to the work done by Chen et al. [26], the emergence of mobile social networks brings the new ways of information diffusion and provides opportunities for viral marketing and viral marketing that is different from the traditional methods for marketing relies on the "word-of-mouth" advantages of mobile social networks and diffuse advertising information more efficiently.

Consumers' social interactions based on preferences must be understood and a new approach to examining the social relationships and sub-network structures affecting purchases is needed. First, friends-based SNS users want to increase the number of people in their online environment (such as school friends and work colleagues) and strengthen their ties by making them participate in SNS. These social relationships tend to be maintained and developed over a long period [27,28].

In the SNS environment, there are many behaviors that interact with other users and form and strengthen human relationships [29]. In addition, in terms of social information sharing, SNS users appear to express personal desires, feelings, interests, and information about their situation [30]. And, they meet the motivation to attract attention through providing information in order to gain interest and gain reputation as a member [31]. Particularly, since the participation of individuals is based on relational sharing, it has a positive effect on the regularity of information sharing [32]. In addition, the social connection created by the use of SNS have a strong influence on the interaction between users and brands [33] and the continued use of SNS can be understood as part of an effort to expand social capital [34].

The characteristics of social relationships such as social pressure, social connectedness, social identification, (mutual) reciprocity, and continuance commitment in friends-based SNS can be used to gather consumer opinions by companies and other organizations seeking to communicate with consumers more effectively. For this reason, organizations recognize the value of relationship formation and seek to create tangible and intangible results by strengthening their bond with consumers through SNS. In addition, a new model explaining the purchase behavior of consumers connected to social networks can be created by examining whether the sub-network structure is considered simultaneously with the social network to better explain the reactions of members with central social network positions. This will be done by analyzing the characteristics of the sub-network in the mobile community network and examining how these characteristics affect the initial diffusion of information.

2.2. Social Cascade Phenomenon and Information Diffusion

Recent studies have identified the information cascade phenomenon in online SNS as well as its causes. Some of the representative social networking sites are recognized as influential information platform. Thus, the users and information have exploded on social networks [35]. Cha et al. [36] examined a social cascade using data collected from Flickr, a typical SNS in the United States and suggested that this was a major factor in information diffusion in social networks. Han and Oak [37] also examined the influence of social contagion by analyzing the social cascade phenomenon as exhibited in information diffusion in the social network of C site, a representative Korean SNS. Sastry et al. [38] also studied the social cascade phenomenon in the diffusion of user-generated content in SNS. Early studies on the information cascade phenomenon in terms of information diffusion have confirmed that the phenomenon is caused by certainty [39]. Christakis and Fowler [40] suggested that social waterfall phenomena can be explained in terms of contagion and connection, two of the most important axes for explaining social networks.

In a relationship formed based on having preferences similar to those of a brand community, people often exchange information about product categories or brands they are interested in and share ideas about their new products. Their strong connections through brand communities thus have an impact on information diffusion [1]. Diffusion is known as a systematic process based on a number of individual adoption behaviors [41]. Liang and Kee [42] examined how message use by contributing users facilitates the diffusion of social media content. As information spreads, consumers surfing the Internet act as information searchers and producers, who actively communicate their experiences [43]. The proliferation of these producers has been measured through information reproduction, whereby the consumer retransmits, reprocesses, or republishes the information and acceptance of WOM, which reflect consumers' attitude formation and purchasing behavior after exposure to WOM information. This diffusion process produces new information communicators, who participate in information reproduction activities and increases the value of the resulting information, thus maximizing WOM value.

Other recent studies have examined how the characteristics of network nodes affect the diffusion of information [44]. Lee et al. [45] confirmed the significant effect of users' adaptation of content provided by companies through WOM communication. Goldenberg et al. [44] suggested that network hubs influence the acceptance of information provided by nodes connected to it, while more innovative hubs influence the information diffusion of more follower hubs. Hirshleifer and Teoh [2] found that information diffusion within a network occurred as herd behavior, whereby the behavior of leading nodes was imitated through information reception by other nodes; here, the node to be seeded and the information acceptance behavior of the followers who imitated it were strongly influential. Thus, fashion information voluntarily diffused among consumers in the fashion community is likely to be reproduced or accommodated mainly by consumers characterized by high usability.

2.3. Social Relationship

Because consumer behaviors such as acceptance occur through behavior modification based on the preferences of neighbors [46], changes in a neighbor's behavior above a critical level positively influence a user to act as the neighbor acts. In other words, a relationship in a social network implies a similarity among preferences and the acceptance of social network members is influenced by the acceptance of those around them.

A social network constitutes a relationship link connecting various social members. In theory, the actors in this specific relationship link interact with the consciousness, utility, and behavior of the other members [47]. As a network of people gathered through a series of relationships, the friends-based SNS, conceptualized as an online-based "acquaintance network" or product of "personal relationship building", can be regarded as being based on social network theory, which deals with the relational dimension of humankind. This network consists of nodes and links, where nodes represent network members and links represent the relationships between the nodes. Nodes may

include various members, such as those in behavioral-interaction relationships (friends); these relationships are paths for exchanging resources such as money, material products, emotional support, or information. The totality of those connected by a specific relationship type is referred to as a “network” and a network based on a specific person is called an “ego-network”. This self-network can be regarded as a network of members related to the social environment of the self at a specific point in time [48].

Granovetter [49] argued that social behavior is structurally embodied in social networks and emphasized the benefits of strong ties established in networks such as blood relations, social communities, and professional communities. Boyd and Ellison [34] suggested that SNS users and the group members with whom they are in contact show solidarity after having observed the solidarity or relation network of other members. Smartphone users promote bandwagon effects via social pressure, such as by using SNS to communicate smoothly with other users and also cause herd behavior [11]. In research on social relationships, social connectedness on SNS was found to be used to represent the perceived strength of the social relationships among users [50]. Woisetschlager et al. [51] argued that users in situations of strong social connectedness who are dissatisfied with a service continue to use it to maintain their desired social relationships. In addition, the technological and social familiarity and (mutual) reciprocity of SNS have increased the interactions between SNS users and the weaker of the ties among those individuals can form and maintain have greatly increased, enabling a wide range of social connections [52]. Table 1 below presents the relevant prior research on social relationships.

Table 1. Prior research on social relationships.

Research	Key Characteristics
Boyd and Ellison [34]	solidarity network, network
Chai et al. [50]	social connectedness, perceived intensity
Hoyer and Maclnnis [48]	ego-network
Park and Maclnnis [53]	consumer group, emotional ties
Goldenberg et al. [11]	social pressure, bandwagon effects, herd behavior
Granovetter [49]	social behavior, network embeddedness
Steinfeld et al. [52]	familiarity, reciprocity, interaction, (social) ties
Woisetschlager et al. [51]	social connectedness
Zaho and Rosson [47]	consciousness, utility, behavior, mutual influence

2.4. Sub-Network Structure

A sub-network is formed through a set of network members grouped according to similarities. In network theory, this is called a “community structure” [54]. Such a community structure is formed through the characteristics of each community, which is a subordinate group in which the common interest is relatively close to that of the community. These communities are characterized by a considerable degree of familiarity and contact among individuals, a special comprehensive base that distinguishes them from nearby groups, and the totality of emotions and attitudes that connect the individuals. For this reason, the sub-network structure can be considered a community within the network based on commonality and its relationships are based on a consciousness of kind and similarity.

Using the concepts of “clustering coefficient” and “path length” to describe the relationship characteristics of network nodes, Watts [55] found that the closer the nodes in the sub-network were, the greater their influence on each other. This characteristic has a significant impact on the diffusion of information within the sub-network [56] because information that is exposed to nodes in a sub-network can be spread more quickly through neighbors who are closely related to the node. Han and Oak [57] reported that members of a sub-network connected by strong tie share characteristics distinct from those of other sub-network members. Newman [58] suggested that each node can exhibit a wide variety of characteristics depending on the types of links it has with other members in the network and that these characteristics can be grouped according to similarity; the similarity of each member in the online community sub-network can be strengthened if the similarity is shared.

Although previous studies have focused on the characteristics of individual nodes affecting information diffusion in networks, Han et al. [15] conceptually proposed that not only the nodes' characteristics but also those of sub-networks should be considered in terms of information diffusion. Heo et al. [59] pointed out that the interactions among users constitute the core of the service quality that leads to continuous use among SNS customers, which is centered on building and maintaining relationships. Suh [60] argued that the degree of familiarity among the members of a particular community site plays an important role in community formation and user engagement. Moody and White [61] distinguished among groups of individuals according to their emotional experiences and issues related to group cohesion, bonding, and commitment, finding that the network structure affected the emotional attachment to the network [62]. Han and Kim [63] divided the structural network characteristics that describe information flow within a community into activity, connectivity, and dominance. Table 2 below presents the relevant prior research on sub-network structure.

Table 2. Prior research on sub-network structure.

Research	Key Characteristics
Han and Kim [63]	activity, connectivity, dominance
Han and Oak [57]	sub-network, connectedness
Heo et al. [59]	interaction
Hoyer and MacInnis [48]	homogeneity
Newman [54]	types of link, similarity
Markovsky and Lawler [62]	emotional attachment
Rowley [64]	strength of tie, density
Moody and White [61]	group cohesion, bonding, commitment, emotional experience
Watts [55]	clustering coefficient, path length
Wasserman and Faust [65]	centrality, centralization

3. Research Methods

3.1. Research Model and Research Hypothesis

We designed a model to measure the causal relationships among the unobserved constructs formulated on the basis of prior empirical research. To better explain the relationship between fashion information diffusion and sub-networks amid the increasing preference-based social interactions between fashion consumers, we applied social network theory from a social psychological perspective to sub-network structures. These influencing relationships provide an integrated structural framework for shaping fad-like and WOM behavior and the behavior of SNS users can be understood as an attempt to increase social capital.

Previous studies on social relationships in networks have examined the degree of the relationships with other network members in terms of the strength of the tie, representing the depth of the relationship and connection density, representing the scope of the relationship from a network-wide perspective [64,66]. A social network is defined as a complex network in which nodes indicate people or other entities in a social context and the links represent any type of relationship among them, like friendship, kinship, collaboration or others [67]. People are using more online social applications in mobile environments as the size and power of smart mobile devices increase and traditional social networks have transformed to be mobile social networks with more practical use [68]. Similarly, mobile social networks are defined as the networks where individuals with similar interests communicate and connect with each other through their mobile phones and/or tablets [69,70]. It is used mostly as an important communication media with rapid growth. Especially, innovative mobile communication and mobile web technologies have facilitated evolutionary changes to people's everyday lives [71]. "Online" social networks are actively contributing to creating a complete virtual social environment, which supports actions involving various social interactions, from simple ones such as "liking" other users' content, up to complex ones such as looking for a job, advertising products and organizing events [72]. Huang et al. [73] find that users in online social networks actively engage in exchanges,

generate positive emotions, and forge relational cohesion. And, they subsequently create online relationships through active interactions.

Wasserman and Faust [65] studied centrality, reflecting the position of a specific member relative to others in the network and degree of concentration, reflecting the degree to which the entire network is concentrated in a specific member in terms of the relationship's positional features. Hoyer and MacInnis [48] studied potential relationships between network members based on homogeneity (i.e., similarity). This study expands the scope of fashion information to include variables that can be applied to friends-based SNS. It is particularly important to grasp the influence of social networks and sub-networks in terms of the structural characteristics affecting other consumers' information, as social interactions among fashion consumers increase based on their preferences.

From a social relationship perspective, Santor et al. [74] found that consumers' purchasing behavior was strongly influenced by the social pressures exerted by the behaviors of neighbors and that the diffusion of these social pressures had a chilling effect that extended over a long period of time [11]. Emotional attachment in a network relationship is based on a relationship that links emotional ties to an individual (e.g., brand, person, place, specific object) in the consumer group [53] and a stronger tie can lead to behavioral and emotional engagement [12]. Furthermore, consumers create social relationships through reference groups and compare and mimic the behavior patterns of social influencers or close neighbors belonging to the same reference group. This suggests that consumers feel a sense of social unity when matching their behavior to that of the reference group [75]. In this study, we attempted to show that consumer self-knowledge-sharing is influenced by trust, mutual reciprocity, and social ties [50]. Continuance commitment is the tendency to maintain relationships over a long period [27]. Social network service users want to increase the number of people in their online environment and strengthen their ties by letting their school friends and colleagues participate in SNS. According to Boyd and Ellison [34], the continued use of social networks can be understood as part of an attempt to expand social capital. On the other hand, the structural characteristics of a sub-network may vary depending on the nodes that constitute it and the characteristics of the links formed between them. Watts [55] measured "path length" as the sum of the closest links between nodes in the network, while Albert and Barabasi [56] found that the shorter the distance between these links, the closer the relationship was.

Smith [76] described a relationship network formed by sharing, recommendation, and distribution activities among users in a system through contents such as conversation type (e.g., e-mail, note, chat, IM), photographs, and video as a communication method that can establish relationships between acquaintances and accumulate them in the system. The social network effect can thus be seen as an effect that brings more value to members [77]. Similarly, research on mobile SNS has shown that a higher number of network members or co-workers leads users to expect more benefits when they join the network [78]. Fielder and Sarstedt [79] also argue that a higher number of users can help network members and increase their desire for an identity in order to better relate to other members as more people participate in the network. This aspect of network effect may also be regarded as constituting the social capital of the structural dimension [80].

Thus, the strong connection structure formed through social relations serves as the inflow path for information in friends-based SNS. The stronger the influence among the nodes in the sub-network of friends-based SNS, the stronger the influence on information diffusion among the members. Our first hypothesis is thus as follows:

H1: The stronger the social relationship characteristics of the friends-based SNS are, the stronger the sub-network structure characteristics will be.

Since the structure of the community at the sub-network level includes characteristics such as consciousness of kind, perceived consciousness, presence of shared rituals, traditions, and sense of moral responsibility [81], it can be argued that the interaction between community members is based

on credibility. While traditional communities form a common bond based on public consciousness of kind, online communities form a consciousness of kind based on personal understanding and interests [59]. The strong links formed through this relationship affect the inflow of information. Furthermore, when certain interactions are more frequent than others, similar product or brand preferences arise [82]. Due to the tendency to trust each other among people with many social similarities, repetitive interactions occur between them and trust is amplified more rapidly. Elliott [83] also noted that online community interaction is an important factor in the formation of trust in communication. Moreover, as mobile SNS using smartphones becomes more popular, people's purchasing behavior becomes more interdependent. As a result, consumers are actively expressing their preferences in social networks and consumers with similar preferences are forming clusters [84]. In addition, Yang and Choi [85] suggested that relationship characteristics must be intensified in order to increase the degree of WOM intention since consumers purchasing fashion products via social media actively communicate with their friends through SNS and emphasize mutual exchange through this use.

In the social cascade phenomenon, individuals follow decisions made by others, using them as the main information source in their decision, rather than making decisions based on information obtained on their own, leading to a continuous diffusion of information [3]. This process can be used as an effective way to maintain and strengthen this relationship and enable social connection with people who are close to the user, including within the reference group of the friends-based SNS considered in this study. Thus, the closer the relationships between the nodes in the sub-network, the greater is their influence on each other. This will have an important influence on the diffusion of information in the sub-network. The second hypothesis is therefore as follows:

H2: The stronger the sub-network structure characteristics of the friends-based SNS, the stronger the fad-like behavior and WOM intention will be.

Further, based on the five constructs for the social relationship characteristics in friends-based SNS and the five constructs for the sub-network structure characteristics (see Figure 1), sub-hypotheses can be developed regarding the causal relationships involved based on the findings of previous research.

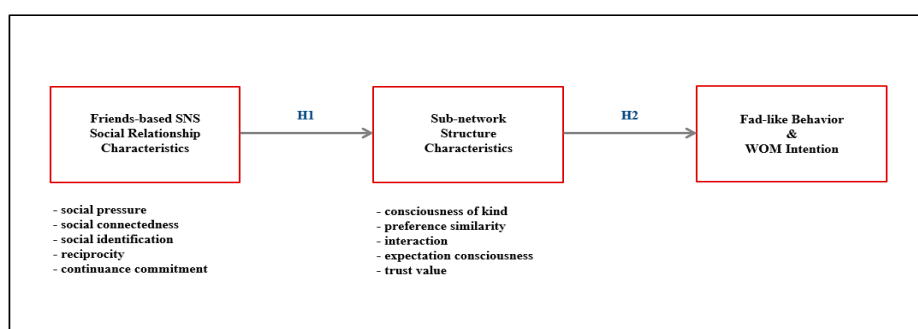


Figure 1. Research model.

3.2. Measurement

Measurements in this study consisted of questions about social relationship characteristics, sub-network structure characteristics, fad-like behavior, WOM intention, and demographic characteristics. The characteristics of social relationships in friends-based SNS comprise the degree of consensus about those relationships, the degree of the perceived strength of the ties in the social relationships, the sense of belonging or connection to the social reference group of the friends-based SNS, the degree of the favorability of the social relationships between SNS members, and the tendency to maintain and develop the social relationships with SNS members, following research

such as Chai et al. [50], Goldenberg et al. [11], Granovetter [16], Lampe et al. [19], Han and Oak [57], Park et al. [86], Pihlstrom and Brush [9], Steinfield et al. [52], Wellman and Frank [10], Woisetschlager et al. [51], and Zarrella and Zarrella [84]. A total of 15 items were measured.

The factors describing sub-network structure characteristics comprise the degree of personal understanding or interest between members within the sub-network of friends-based SNS, the degree of choice matching between the influencer and other sub-network members, the degree of interaction between sub-network members, the implicit behavior and expectation consciousness among sub-network members, and the degree of value building for identification trust among members, following research such as Albert and Barabasi [56], Han and Oak [57], Heo et al. [59], Newman and Girvan [54], Park and MaInnis [53], Song and Hwang [17], Molla and Licker [87], and Watts [55]. A total of 15 items were measured. In addition, factors related to the diffusion of fashion information include the degree of shared behavior about fashion information and fashion information diffusion through WOM or other SNS, following studies such as Boyd and Ellison [34], Goldenberg et al. [44], Han and Oak [37], Hirshleifer and Teoh [2], Lawler [12], Sastry et al. [38], and Song et al. [28]. Fad-like behavior and WOM intention were measured using three items.

3.3. Data Collection and Analysis

First, the research measurements were developed by considering the literature review, the results of interviews with specialists at mobile friends-based SNS companies conducted through the Delphi technique, the social cascade phenomenon, social network theory, the sub-network structure, and the information diffusion framework. Second, to understand the characteristics of the social relationship and sub-network structure affecting the diffusion of fashion information, we conducted a critical incident technique (CIT) analysis through open-ended questions about the diffusion of fashion information from a social network perspective for companies providing mobile friends-based SNS, which produced several concrete items. Third, we selected experienced users of fashion information (e.g., general product information related to fashion items, prices, promotions [such as sale coupons], distribution information, customer reviews) using a friends-based SNS service as an analytical unit in order to collect reliable and valid data and accurately assess social cascade-related measurements in friends-based SNS focusing on fashion information diffusion. A questionnaire was implemented with the cooperation of a friends-based SNS company in Korea and a mobile bulletin board was used to display (i.e., link to) the mobile questionnaire and collect the data. Both a pilot and final survey were conducted. The pilot survey was carried out from 1 April 2016, to 15 April 2016, on 50 people in order to establish the important categories for social relationship and sub-network structure characteristics and correct any errors by identifying the primary structural relationship between the fad-like behavior occurring in the diffusion environment of fashion information and WOM formation-related variables in the friends-based SNS. Then, the final survey was conducted online (using the bulletin board) from 1 May 2016, to 30 May 2016, in consultation with those in charge at the friends-based SNS company. Responses were obtained from 320 people and the 311 responses with no missing values were used for data analysis. Research constructs were operationalized using key findings from prior empirical research and a pilot test (survey) using a five-point Likert scale.

Fourth, we conducted frequency analysis for the general characteristics of the sample, a reliability test, and a validity test for internal consistency using SPSS 20.0. We also conducted a measurement model analysis and path analysis using AMOS 20.0. We used structural equation modeling for the parameters of the sub-network structure characteristics to examine the influence of the social relationship characteristics and information diffusion behavior. If, as in this study, the parameters serve as both independent and dependent variables, it is difficult to evaluate them because regression analysis cannot perform both roles at the same time. Path analysis in this study was conducted through the two-step procedure proposed by Anderson and Gerbing [88]. In the first step, exploratory factor and confirmatory factor analyses (CFA) were performed to evaluate the measurement model. To check for discriminant validity, a correlation analysis was carried out on the study's research concept. In the

second step, path analysis was performed based on the evaluation results of the measurement model. The fitness of the measurement model and a path analysis were performed with fit indexes such as X^2 (df, p), GFI (goodness-of-fit index; ≥ 0.9 is preferred), AGFI (adjusted goodness-of-fit index; ≥ 0.9 is preferred), RMSEA (root mean square error of approximation; ≤ 0.08 is preferred), and CFI (comparative fit index; ≥ 0.9 is preferred). Based on the above analysis results, we verified the research hypotheses while considering the differences between the results of each model concerning social relationship characteristics, sub-network structure characteristics, fad-like behavior, and WOM intention in the friends-based SNS.

3.4. Evaluation of Common Method Bias

As this study used the self-report survey method, common method bias may have occurred because all the variables were measured using the same respondents. The common method bias can also be caused by the convenience of the measurement method used (such as surveys) or the measurement situation rather than the respondents [89,90]. Controls for eliminating the common method bias include the preliminary method (research design/survey composition) and posterior method (statistical analysis) [91]. To reduce the recall cues and coherence motivation used by the respondents in the research design stage, we divided the survey into first and second stages. The first-stage survey excluded the dependent variables and the second-stage survey included the dependent variables, with time difference. During the survey preparation stage, we verified the items' objectivity, clarity and simplicity by considering the opinions of experts at friends-based SNS companies. We also conducted a preliminary survey on the sample to enhance its specificity and relevance.

We also conducted a non-rotation factor analysis using the principal component method. A single factor test showed that the variance among the factors with the largest explanatory power among the items with eigenvalues greater than 1 was 21.67%. Hence, the common method bias was not a problem in this study [92]. The results of a confirmatory factor analysis confirmed the construct validity of all the study's estimation variables.

4. Results

4.1. Demographic Characteristics of Research Subjects

The demographic characteristics of the research subjects are shown in Table 3 below.

Table 3. Demographic characteristics of research subjects.

Item		Number of People (%)	Item		Number of People (%)
Gender	Female	156 (50.2)	Education Level	Attending or had graduated from college/university	222 (71.4)
	Male	155 (49.8)		Attending or had graduated from graduate school	33 (10.6)
Age	20–29	142 (45.7)		Attending or had graduated from vocational/technical college	30 (9.6)
	30–39	80 (25.7)		Graduated from high school or a lower-level school	26 (8.4)
	40–49	46 (14.8)		General office worker	120 (38.6)
	50–	43 (13.8)		Student	79 (25.4)
Average Monthly Household Income	300–below 500 million won	127 (40.8)	Occupation	Professional technical worker/skilled worker	33 (10.6)
	500–below 700 million won	74 (23.8)		Housewife	21 (6.8)
	100–below 300 million won	60 (19.3)		Business manager	19 (6.1)

Table 3. Cont.

Item		Number of People (%)		Item	Number of People (%)
Average Monthly Household Income	700–below 900 million won	32 (10.3)	Occupation	Professional	18 (5.8)
	below 100 million won	9 (2.9)		Sales service worker	16 (5.1)
	900 million won or above	9 (2.9)		Unemployed	5 (1.6)

4.2. Reliability and Validity Test

Prior to evaluating the measurement model, we tested its reliability by calculating Cronbach's α coefficients, used to verify the internal consistency of each construct. First, a factor analysis using varimax rotation for 15 items explaining the characteristics of social relationships in friends-based SNS produced five factors of social pressure (three items), social connectedness (three items), social identification (three items), mutual reciprocity (three items), and continuance commitment (three items) with eigenvalues of 1 or above, as shown in Table 4. The total variance explained by these five factors was 75.301% and the Cronbach's α coefficients were all 0.751 or higher, showing a high level of reliability for the questionnaire items.

A factor analysis using varimax rotation for 15 items describing the characteristics of sub-network structure characteristics produced five factors of consciousness of kind (three items), preference similarity (three items), (mutual) interaction (three items), (future) expectation consciousness (three items), and trust value (three items) with eigenvalues of 1 or above, as shown in Table 5. The total variance explained by these five factors was 69.028% and the Cronbach's α coefficients were all 0.713 or higher, showing a high level of reliability for the questionnaire items. As Table 6 shows, the single dimensionality of each research variable related to fashion information formation (i.e., fad-like behavior, WOM intention) was 0.773 or higher for each single factor. The reliability of each single factor was 0.775 or higher, indicating a significant level of reliability.

Table 4. Reliability and validity analysis of factors for social relationship characteristics of friends-based social network service (SNS).

Variable	Item	Eigenvalues	Component	Variance	Cronbach's α
social pressure	• Level of participation in discussion	2.006	0.805	23.851	0.751
	• Level of interest		0.863		
	• Level of acceptance of others' opinions		0.783		
social connectedness	• Level of interest in information	2.404	0.908	17.568	0.876
	• Level of fostering environment for relationship-building		0.899		
	• Level of sharing concerns		0.878		
social identification	• Level of value in sharing interests	2.235	0.869	14.131	0.828
	• Level of value in sharing experiences		0.864		
	• Level of value in my activities		0.856		
reciprocity	• Level of comfort during conversation	2.233	0.883	11.589	0.828
	• Level of importance of social relationship		0.858		
	• Level of building close relationship		0.847		
continuance commitment	• Level of importance of maintaining continuous relationship	2.196	0.905	8.161	0.816
	• Level of expectations on long-term relationship		0.852		
	• Level of benefits of maintaining long-term relationship		0.807		

Table 5. Reliability and validity analysis of factors for sub-network structure characteristics.

Variable	Item	Eigenvalues	Component	Variance	Cronbach's α
consciousness of kind	• Level of sense of belonging	1.924	0.847	16.542	0.713
	• Level of participation		0.834		
	• Level of fellowship		0.715		
preference similarity	• Level of similarities in preferences	1.884	0.829	15.465	0.796
	• Level of similarities in interests		0.791		
	• Level of similarities in recommended information		0.755		
interaction	• Level of adding friends (neighbors)	1.970	0.823	14.326	0.736
	• Level of sharing personal experiences		0.806		
	• Level of leaving replies (messages)		0.802		
expectation consciousness	• Level of importance of social-oriented values	1.756	0.783	13.770	0.775
	• Level of importance of social-oriented self-realization		0.776		
	• Level of behaviors and expectations of social-oriented values		0.736		
trust value	• Level of reliability of the information	2.081	0.876	8.926	0.772
	• Level of value of behavior and objectives		0.865		
	• Level of candidness and trust		0.752		

Table 6. Reliability and validity analysis of single factors.

Variable	Item	Eigenvalues	Component	Variance	Cronbach's α
fad-like behavior	• Level of perception of the effectiveness of recommended information	2.422	0.928	21.670	0.880
	• Level of similar outcome selection		0.886		
	• Level of similar decision process		0.881		
word-of-mouth intention	• Level of intent to recommend to acquaintances	2.075	0.871	2.075	0.775
	• Level of information recommendation		0.847		
	• Level of positive expression		0.773		

4.3. Confirmatory Factory Analysis

Table 7 summarizes the results of the confirmatory factor analysis. Measuring the unstandardized coefficients, standardized coefficients, S.E., error variance, C.R., construct reliability, and average variance extracted (AVE) showed that the standardized coefficients were all 0.6 or higher, proving construct validity. The AVE results were all 0.5 or higher, proving convergent validity. Moreover, since the construct reliability results were all 0.7 or higher, internal consistency and convergent validity were also proven.

Table 7. Results of confirmatory factor analysis.

Measurement Item	Unstandardized Coefficient	Standardized Coefficient	S.E.	C.R.	Construct Reliability	AVE
Social Relationship Characteristics						
SP 1	1.000	0.866	-	-		
SP 2	0.864	0.835	0.034	9.151	0.768	0.667
SP 3	0.812	0.744	0.024	9.588		
SC 1	1.000	0.871	-	-		
SC 2	0.894	0.811	0.028	9.164	0.831	0.802
SC 3	0.771	0.791	0.021	8.641		
SI 1	1.000	0.830	-	-		
SI 2	0.904	0.722	0.029	9.297	0.823	0.556
SI 3	0.832	0.678	0.026	9.054		
R 1	1.000	0.827	-	-		
R 2	0.850	0.815	0.034	8.338	0.816	0.635
R 3	0.772	0.757	0.027	7.194		
CC 1	1.000	0.695	-	-		
CC 2	0.893	0.893	0.036	8.420	0.773	0.635
CC 3	0.811	0.684	0.019	7.359		
Sub-Network Structure Characteristics						
COK 1	1.000	0.575	-	-		
COK 2	0.790	0.477	0.036	9.680	0.761	0.639
COK 3	0.778	0.475	0.020	8.762		
PS 1	1.000	0.706	-	-		
PS 2	0.901	0.507	0.039	9.632	0.836	0.619
PS 3	0.846	0.495	0.025	8.399		
I 1	1.000	0.595	-	-		
I 2	0.899	0.565	0.031	9.276	0.773	0.654
I 3	0.862	0.458	0.024	8.951		
EC 1	1.000	0.563	-	-		
EC 2	0.919	0.519	0.031	9.792	0.805	0.647
EC 3	0.863	0.365	0.026	8.211		
TV 1	1.000	0.644	-	-		
TV 2	0.878	0.553	0.036	9.299	0.786	0.671
TV 3	0.753	0.496	0.017	8.925		
Fad-like Behavior						
FLB 1	1.000	0.869	-	-		
FLB 2	0.852	0.865	0.032	9.019	0.821	0.807
FLB 3	0.841	0.783	0.019	8.191		
Word-of-mouth Intention						
WOM 1	1.000	0.770	-	-		
WOM 2	0.910	0.666	0.036	9.387	0.775	0.689
WOM 3	0.856	0.565	0.023	8.874		

4.4. Discriminant Validity Analysis

We also examined whether 1 occurred in the estimates of the correlation coefficient between each research concept to verify the discriminant validity. Most of the correlation coefficients at the statistically significant levels of $p < 0.05$, $p < 0.01$, and $p < 0.001$ were shown to be less than 1. Thus, the null hypothesis that the correlation coefficient between each research concept is the same ($\phi = 1.0$) was rejected since 1 was not included. Therefore, discriminant validity was verified (see Table 8).

Table 8. Result of discriminant validity.

Variable	1	2	3	4	5	6	7	8	9	10	11	12
social pressure	1											
social connectedness	0.578 **	1										
social identification	0.577 **	0.677 **	1									
reciprocity	0.522 **	0.582 **	0.746 **	1								
continuance commitment	0.541 **	0.572 **	0.684 **	0.628 **	1							
consciousness of kind	0.432 **	0.450 **	0.411 **	0.372 **	0.391 **	1						
preference similarity	0.508 **	0.496 **	0.545 **	0.527 **	0.495 **	0.466 **	1					
interaction	0.431 **	0.461 **	0.406 **	0.386 **	0.397 **	0.462 **	0.499 **	1				
expectation consciousness	0.462 **	0.354 **	0.332 **	0.300 **	0.342 **	0.526 **	0.532 **	0.516 **	1			
trust value	0.518 **	0.585 **	0.588 **	0.508 **	0.523 **	0.474 **	0.487 **	0.492 **	0.430 **	1		
fad-like behavior	0.564 ***	0.953 **	0.679 **	0.584 **	0.581 **	0.427 **	0.489 **	0.426 **	0.317 **	0.547 **	1	
word-of-mouth intention	0.512 **	0.477 **	0.525 **	0.486 **	0.514 **	0.335 **	0.473 **	0.324 **	0.317 **	0.457 **	0.475 **	1

1–12: Pearson Cross-correlation, ** $p < 0.01$.

4.5. Verification of Research Hypotheses

4.5.1. Verification of Fitness for Path Analysis

We estimated the fitness and parameter of the path analysis through the maximum likelihood method. The fitness index of the path analysis for the whole integrated model was $\chi^2 = 430.80$ ($df = 7, p = 0.005$), GFI = 0.952, AGFI = 0.902, RMR = 0.096, NFI = 0.946, CFI = 0.926, and RMSEA = 0.046, indicating a satisfactory relationship between the research concepts in the proposed model (see Table 9).

Table 9. Result of estimation of model fit.

Concept	Goodness of Fit Index								
	χ^2	Df	p-Value	GFI	AGFI	RMR	NFI	CFI	RMSEA
study model	430.80	7	0.005	0.952	0.902	0.096	0.946	0.926	0.046

GFI = Goodness of fit index, AGFI = Adjusted goodness of fit index, RMR = Root mean square residual, RMSEA = Root mean square error of approximation, NFI = Normed fit index, CFI = Comparative fit index.

4.5.2. Testing Hypothesis for Fashion Information Diffusion Model of Friends-Based SNS

Figure 2 and Table 10 show the results of the tests for the hypotheses on the diffusion of fashion information in the friends-based SNS.

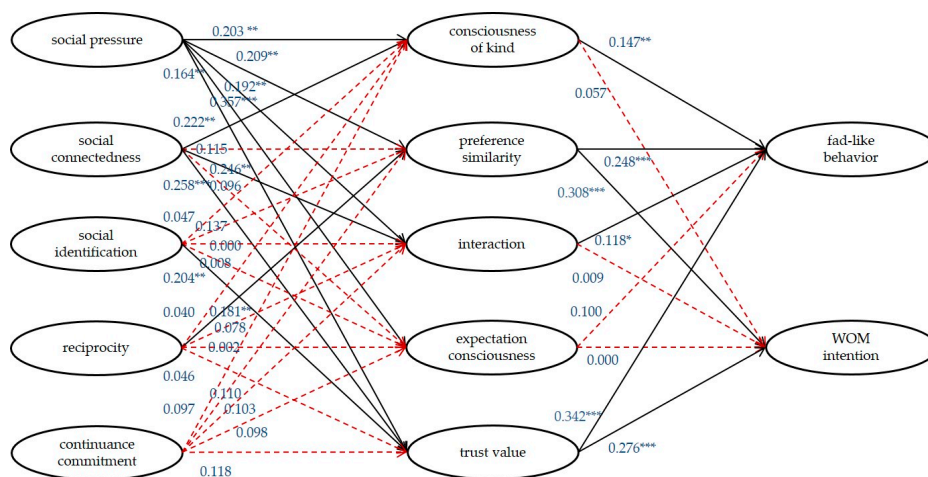


Figure 2. Model of research findings.

The results of this study are as follows. First, the analysis of the path relationship between the characteristics of social relationship and sub-network structure in the friends-based SNS showed that

social pressure ($\beta = 0.203$, $CR = 3.117$, $p = 0.002$) and social connectedness ($\beta = 0.222$, $CR = 3.118$, $p = 0.002$) had significant effects on consciousness of kind, while social identification ($\beta = 0.047$, $CR = 0.532$, $p = 0.595$), mutual reciprocity ($\beta = 0.040$, $CR = 0.526$, $p = 0.599$), and continuance commitment ($\beta = 0.097$, $CR = 1.351$, $p = 0.178$) did not. Social pressure ($\beta = 0.209$, $CR = 3.528$, $p = 0.000$) and (mutual) reciprocity ($\beta = 0.181$, $CR = 2.576$, $p = 0.010$) had significant effects on preference similarity but social identification ($\beta = 0.137$, $CR = 1.711$, $p = 0.088$) and continuance commitment ($\beta = 0.110$, $CR = 1.678$, $p = 0.094$) did not. Social pressure ($\beta = 0.192$, $CR = 2.969$, $p = 0.003$) and social connectedness ($\beta = 0.246$, $CR = 3.463$, $p = 0.001$) had significant effects on interaction but social identification ($\beta = 0.000$, $CR = 0.004$, $p = 0.997$), (mutual) reciprocity ($\beta = 0.078$, $CR = 1.016$, $p = 0.311$) and continuance commitment ($\beta = 0.103$, $CR = 1.439$, $p = 0.151$) did not. Social pressure ($\beta = 0.357$, $CR = 5.387$, $p = 0.000$) had a significant effect on future expectation consciousness but social connectedness ($\beta = 0.096$, $CR = 1.320$, $p = 0.188$), social identification ($\beta = 0.008$, $CR = 0.087$, $p = 0.931$), mutual reciprocity ($\beta = 0.002$, $CR = 0.025$, $p = 0.980$), and continuance commitment ($\beta = 0.098$, $CR = 1.340$, $p = 0.181$) did not. Finally, social pressure ($\beta = 0.164$, $CR = 2.895$, $p = 0.004$), social connectedness ($\beta = 0.258$, $CR = 4.164$, $p = 0.000$), and social identification ($\beta = 0.204$, $CR = 2.662$, $p = 0.008$) had significant effects on trust value but (mutual) reciprocity ($\beta = 0.046$, $CR = 0.686$, $p = 0.493$) and continuance commitment ($\beta = 0.118$, $CR = 1.889$, $p = 0.060$) did not.

Second, the analysis of the path relationships between the sub-network structure characteristics of friends-based SNS and the fashion information diffusion variables (i.e., fad-like behavior, WOM intention) showed that consciousness of kind ($\beta = 0.147$, $CR = 2.592$, $p = 0.010$), preference similarity ($\beta = 0.248$, $CR = 4.278$, $p = 0.000$), interaction $\beta = 0.118$, $CR = 2.047$, $p = 0.041$), and trust value ($\beta = 0.342$, $CR = 6.091$, $p = 0.000$) had significant effects on fad-like behavior but future expectation consciousness ($\beta = 0.100$, $CR = 1.701$, $p = 0.090$) did not. Preference similarity ($\beta = 0.308$, $CR = 4.930$, $p = 0.000$) and trust value ($\beta = 0.276$, $CR = 4.581$, $p = 0.000$) had significant impacts on WOM intention but consciousness of kind ($\beta = 0.057$, $CR = 0.933$, $p = 0.352$), interaction ($\beta = 0.009$, $CR = 0.142$, $p = 0.887$), and future expectation consciousness ($\beta = 0.000$, $CR = 0.005$, $p = 0.996$) did not.

Table 10. Results of research hypothesis testing.

Type	Pathway	Estimate	S.E.	C.R.	p-Value	Result
H1-1-1	social pressure → consciousness of kind	0.203	0.065	3.117	0.002	Accept
H1-1-2	social connectedness → consciousness of kind	0.222	0.071	3.118	0.002	Accept
H1-1-3	social identification → consciousness of kind	0.047	0.088	0.532	0.595	Reject
H1-1-4	reciprocity → consciousness of kind	0.040	0.077	0.526	0.599	Reject
H1-1-5	continuance commitment → consciousness of kind	0.097	0.072	1.351	0.178	Reject
H1-2-1	social pressure → preference similarity	0.209	0.059	3.528	0.000	Accept
H1-2-2	social connectedness → preference similarity	0.115	0.065	1.771	0.078	Reject
H1-2-3	social identification → preference similarity	0.137	0.080	1.711	0.088	Reject
H1-2-4	reciprocity → preference similarity	0.181	0.070	2.576	0.010	Accept
H1-2-5	continuance commitment → preference similarity	0.110	0.065	1.678	0.094	Reject
H1-3-1	social pressure → interaction	0.192	0.065	2.969	0.003	Accept
H1-3-2	social connectedness → interaction	0.246	0.071	3.463	0.001	Accept
H1-3-3	social identification → interaction	0.000	0.087	0.004	0.997	Reject
H1-3-4	reciprocity → interaction	0.078	0.077	1.016	0.311	Reject
H1-3-5	continuance commitment → interaction	0.103	0.071	1.439	0.151	Reject
H1-4-1	social pressure → expectation consciousness	0.357	0.066	5.387	0.000	Accept
H1-4-2	social connectedness → expectation consciousness	0.096	0.073	1.320	0.188	Reject
H1-4-3	social identification → expectation consciousness	0.008	0.090	0.087	0.931	Reject
H1-4-4	reciprocity → expectation consciousness	0.002	0.079	0.025	0.980	Reject
H1-4-5	continuance commitment → expectation consciousness	0.098	0.073	1.340	0.181	Reject
H1-5-1	social pressure → trust value	0.164	0.056	2.896	0.004	Accept
H1-5-2	social connectedness → trust value	0.258	0.062	4.164	0.000	Accept
H1-5-3	social identification → trust value	0.204	0.076	2.662	0.008	Accept
H1-5-4	reciprocity → trust value	0.046	0.067	0.686	0.493	Reject
H1-5-5	continuance commitment → trust value	0.118	0.062	1.889	0.060	Reject

Table 10. Cont.

Type	Pathway	Estimate	S.E.	C.R.	p-Value	Result
H2-1-1	consciousness of kind → fad-like behavior	0.147	0.057	2.592	0.010	Accept
H2-1-2	preference similarity → fad-like behavior	0.248	0.058	4.278	0.000	Accept
H2-1-3	interaction → fad-like behavior	0.118	0.058	2.047	0.041	Accept
H2-1-4	expectation consciousness → fad-like behavior	0.100	0.059	1.701	0.090	Reject
H2-1-5	trust value → fad-like behavior	0.342	0.056	6.091	0.000	Accept
H2-2-1	consciousness of kind → word-of-mouth intention	0.057	0.061	0.933	0.352	Reject
H2-2-2	preference similarity → word-of-mouth intention	0.308	0.062	4.930	0.000	Accept
H2-2-3	interaction → word-of-mouth intention	0.009	0.062	0.142	0.887	Reject
H2-2-4	expectation consciousness → word-of-mouth intention	0.000	0.064	0.005	0.996	Reject
H2-2-5	trust value → word-of-mouth intention	0.276	0.060	4.581	0.000	Accept

CR = Critical ratio, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.5.3. Discussion of Research Findings

We discuss this study's findings in terms of the variable relationships and by comparing them with the findings of previous research. The key findings of this study are as follows. First, the positive effects of social pressure and social connectedness on consciousness of kind are driven by social pressure from the united actions of those surrounding the users through changes in consumer behavior, including purchasing [74]. These results can be interpreted in ways similar to those of a study that argued that the characteristics of each network node can be grouped according to similarity [58] and those of another study showing that the underlying attachment of relationships in the network connects to an emotional bond with an individual in the consumer group [53]. Second, the positive effects of social pressure and (mutual) reciprocity on preference similarity can be interpreted in ways similar to the findings of several studies: one argued that consumers create social relationships through reference groups and compare among and imitate the behavioral patterns of social influencers or close neighbors belonging to the same reference group [75]; another showed that members belonging to a sub-network connected by strong ties share characteristics distinct from those of other sub-network members [57]; and another indicated that tie strength, density, and centrality as well as member centralization all influence homogeneity (the similarity among network members) [65]. Third, the result showing that social pressures and social connectedness have positive effects on interactivity can be interpreted similarly to the results of several studies: one argued that the diffusion of social pressures has a chilling effect that spreads more widely over a longer period of time due to interactions among members [11]; another showed that the behaviors of members in a network interact with the consciousness, utility, and behavior of other members in the same network [93]; and another indicated that social familiarity in SNS increased user interactions and relationships and that a wide range of social connections are possible [52]. Fourth, social pressure's positive effect on the consciousness of future expectation can be interpreted similarly to the results of studies arguing that the social pressures of SNS users promote the bandwagon effect, resulting in herd behavior [11], that there is a tendency to maintain and develop member relationships over a long period [27] and that people continue to use these services to maintain their social relationships [51]. Fifth, that social pressure, social connectedness, and social identification had positive effects on trust values can be interpreted similarly to the results of studies arguing that social connection increases relationship commitment and trust in a mobile environment [94], that behavioral emotional commitment and trust may be triggered by strong links [12], and that the degree of intimacy felt by members of a community plays an important role in community and trust formation [60]. Sixth, that consciousness of kind, preference similarity, and interaction have positive effects on fad-like behavior is a result similar to the earlier finding that the positive effect leads to an intention to act on cohesion in the case of social cohesion [12], that the behavior of a particular member becomes information and influences neighbors' behavior in a social network [3], and that these phenomena (whereby one member affects others' behaviors) can be explained as fads [37]. It is also similar to the result of a study showing that the strong link formed by the same consciousness created in an online community influences the inflow path of information

and that frequent interactions lead to similar preferences for products or brands [82]. The results are also similar to those of studies arguing that SNS members with similar interests or inclinations are more likely to purchase similar products in similar circumstances [14], that members with shared similarities have strengthened relationships in online community sub-networks [95], that community members are constantly affected by expressions of opinions or the sharing of views concerning other people's purchases or issues [1], and that similar preferences are found in the choices of products or brands when frequent interactions occur with other people [96]. Seventh, that preference similarity and trust value positively affected WOM intention can be interpreted similarly to the finding that the act of sharing knowledge is influenced by trust, (mutual) reciprocity, and social connectedness [51] and that information can be spread more quickly through neighbors who are closely related to the node when information is exposed to nodes in a sub-network [56].

5. Conclusions

This study identifies the diffusion of fashion information in friends-based SNS as a sustainable development in terms of the social cascade phenomenon and examines its effects. Unlike prior research on SNS, which has investigated only the influence of mass media, this study seeks to identify the social cascade phenomenon occurring in social networks in the diffusion of fashion information from the viewpoint of the social network formed by mobile friends-based SNS firms and to offer implications based on the influencing relationships among the variables.

The research implications of this study are as follows. First, this study approaches the structural characteristics of social relationships in friends-based SNS using the social network viewpoint in order to reveal the factors necessary for establishing a successful mobile WOM marketing strategy. Second, a model is also presented that integrates sub-network research and mobile WOM research through an examination of the diffusion of fashion information via multidimensional influencing factors, including the characteristics of the sub-network of friends-based SNS. The results of this study can contribute to the development of a more informative information diffusion formation model when integrated with existing SNS studies.

The marketing implications of this study are as follows. First, to raise awareness of belonging, participation, and consciousness of kind related to the peer awareness of community members in friends-based SNS, it is necessary to increase the participation of community members in the discussion, create interest among members, and intensify their social pressure in order to attract their attention. It is also necessary to increase the social connectedness formed by shared anxieties among the members, provide a community environment that enhances relationship formation, and increase interest in the information shared among the members. Second, increasing the similarities in the tastes, interests, preferences, and recommendation information among community members in friends-based SNS requires increasing the social comfort, conversational comfort, importance of social relationships, and the (mutual) reciprocity that lead to intimacy between members. Third, social pressure and social connectedness should be enhanced in order to increase the interactions related to the formation of friends (neighbors) and the sharing of personal experiences among members as well as reply (message) participation in the friends-based SNS. Fourth, social pressures should be raised to increase the importance of the social-oriented values, self-realization values, and future consciousness of expectations related to members' social-oriented values and sense of expectation. The community should seek similar tastes and interests and increase preference similarities related to recommendation information. Fifth, raising the trust value of information, the value of behaviors and goals, and trust values related to honesty and beliefs among community members in friends-based SNS requires enhancing social pressure, social connectedness, and the value of sharing interests and experiences. It is also necessary to increase users' sense of social identification, whereby their sense that their activities are worthwhile is intensified. Sixth, increasing the perceived usefulness of the recommended fashion information, selecting results similar to the results of the recommended fashion information, and the fad-like behavior related to following the fashion information recommended among community

members of friends-based SNS require increasing users' sense of belonging and participation and raising their consciousness of kind (i.e., recognition of fellowship). Community members should find similar tastes and interests, while increasing the similarity of their preferences and recommendation information. It is also necessary to enhance members' formation of friends (neighbors), sharing of personal experiences, and reply (message) participation. Seventh, preference similarity as well as trust values in information, behaviors and goals, and honesty and belief among community members should be enhanced in order to increase fashion information recommendations from close acquaintances and the WOM intention to effectively deliver the recommendations and fashion information in friends-based SNS.

The results of this study make the following managerial implications. In order to increase the connection with the customized brand (company) in accordance with the characteristics of the community in terms of the strategic utilization of viral marketing through the social relation of the friends-based SNS, it is necessary to create a high word-of-mouth environment. It can be facilitated by encouraging voluntary sharing of opinions and participation of community by supplementing information sharing through interests and feedback by different fields, providing personalized question-solving service, offering online event-related offline brand experience event, providing customized events for community anniversaries and events, and sponsoring them. In addition, it is important to provide a variety of formats such as community-specific creative design, personal character decoration, game and video and so forth, so as to increase interaction and connection within the sub-network by raising the unique identity of the community. Further, it is necessary to diversify media communication services such as Twitter, Instagram, and Kakao Talk that can increase the network externality of information.

The results of this study should not only facilitate social connections among members of friends-based SNS but also help expand and evaluate them by providing insights into their continuous maintenance and ways of strengthening the relationship for sustainable development. This study advanced the research by classifying the key variables in friends-based SNS concerning the diffusion of fashion information and developing concrete theoretical measures for them through in-depth interviews with professional operators of a friends-based SNS and consumers based on the establishment of a cooperation system with industry experts. Future research could identify the measurement factors and relationships that were not considered in this study. Further research is also needed to clarify the various variables that act as antecedent and intermediate factors in order to understand how the brand–consumer relationship is linked to the user's psychological characteristics. Moreover, as this study conducted a measurement of general fashion information diffusion based on friends-based SNS, additional research is needed to take into account ways of classifying categories of fashion information, SNS group purposes and characteristics, and controlled demographic characteristics in order to examine the differentials across the factors influencing friends-based SNS, which should generate more significant research results.

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