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THE INFLUENCE OF USER INTERACTION AND PARTICIPATION IN SOCIAL MEDIA ON THE CONSUMPTION INTENTION OF NICHE PRODUCTS

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Abstract

The potential of social media in helping businesses generate commercial values has attracted significant attention from researchers and practitioners alike in recent years. An important characteristic differentiating social media from traditional media is the central role of user interaction and participation in generating content that makes the platform sustainable and potentially profitable. It has been noted that social media may be particularly apt in promoting the sales of niche products, due to the tendency of consumers to generate reviews and discuss about such products that raise awareness about them. In this study, we build on and extend the extant literature to investigate how patterns of social interaction among the consumers in discussing about a niche product influence the overall level of participation, which in turn enhances consumption intention of the product. Through analyzing data from a social media site that allows consumers to comment on and discuss about books of philosophical genre (a niche product type), we show that the level of user participation can indeed have a significant positive effect on consumption intention. Furthermore, inclusiveness and betweenness centralization structures may enhance the participation level, but out-degree centralization has a detrimental effect. Implications for research and practice are discussed.

Keywords: Social media participation, Network structural properties, Social network analysis, Niche products

1. INTRODUCTION

Businesses today are increasingly deploying social media e.g., forums, blogs, wikis, and social networking services to conduct their commercial activities, a paradigm shift that has been termed as social commerce (Curty and Zhang. 2011). It is surmised that the content generated through user interaction and participation in the social media platforms e.g., product review and recommendation, could be a potent force that drives product sales (Chen and Xie 2008). Corollary to this, social media has been hailed as a democratizing force that enables consumers to discuss niche products that were previously ignored by mainstream media (Anderson 2004). Niche products are products that appeal to a small market segment, and are typical products on the "long tail" (i.e., a phenomenon whereby products with low sales can bring promising profit given enough distribution channels due to their huge total market). By facilitating large-scale social interaction and participation among the consumers, social media platform could promote conversations on such products, and enable enthusiasts to obtain information that is otherwise unavailable in the offline context.

Additionally, traditional theories of product-related interpersonal communication suggest that consumers have a tendency of engaging in word of mouth (WOM) about less-known and unique products, motivated by a desire to look more intelligent and more helpful in the eyes of their interlocutors (Sundaram et al. 1998). In the online context, it has also been indicated that consumers prefer to contribute post-consumption review information for products that are less available and less successful in the market (Dellarocas et al. 2010)[1]. Collectively, this suggests that social media may serve as a particularly apt platform for promoting niche products, and user interaction and participation in generating content about the niche products may play a crucial role in this aspect. However, there is a dearth of understanding on what specific kinds of user interaction could lead to favorable outcomes in the context of social media for promoting niche products

Hence, the purpose of this study is to go one step further by investigating the patterns of social interaction among users that can promote the consumption/purchase intention of niche products in social media. For this purpose, social network analysis (SNA) affords a systematic understanding about different forms of social interaction patterns, which are conceptualized and operationalized as network structural properties (Wasserman and Faust 1994). These network structural properties have been found to have non-trivial influences on individual and collective behaviors in various domains, including sociology (Wellman et al. 1996), consumer behavior (Brown and Reingen 1987), and organizational research (Hutt and Reingen 1987). In the online context, network structural properties have also been used to analyze behaviors such as knowledge sharing (Huang and

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[1] The study also finds that, at the same time, consumers have a preference to contribute review information for popular products.

DeSanctis 2005), and participation in online policy deliberation forums (Phang et al. 2007) and healthcare forums (Liu and Chan 2011).

In this study, we develop a research model that relates pertinent social network structural properties to overall participation of consumers in generating content about a niche product, which may subsequently raise consumption intention of the product (i.e., purchase of the product). We collected data from a website pivoted on social media that allows consumers to post comments and interact with each other on books of philosophical genre, which typify a niche product due to their appeal to a relatively small audience base. UCINET was employed to obtain network structural properties from the data entailing social interaction among the users. User participation was reflected in the total number of postings generated for a book. The site allows us to capture the consumption intention of consumers with a feature that allows consumers to click on a button to indicate their intention to read the book concerned. In the next section, we present the research model and hypotheses of this study.

2.   RESEARCH MODEL AND HYPOTHESES

2.1 Social Network Analysis (SNA)

SNA has been widely applied in sociological and behavioral sciences in recent decades. The focus of SNA lies in social networks that consist of actors and relationships among them, and the conceptualization and quantification of the relationships for investigation purposes (Wasserman and Faust 1994, Wetherell et al. 1994). Based on graph theory (Freeman 1979), SNA denotes network actors as nodes, and their relationships as ties (Wasserman and Faust 1994). Over the years, various social network properties have been derived, ranging from individual to overall network level, to aid in understanding the nature of a social network and its analysis (Wasserman and Faust 1994). In this study, we focus on six network structural properties at the network level that have been widely employed to investigate the collective behavior of individuals in online social networks (Huang and DeSanctis 2005; Phang et al. 2007) i.e., inclusiveness, reciprocity, centralization (in-degree, out-degree, betweenness), and core-periphery structures.

A central thesis of SNA is that individuals within a social network influence each other, and that the different patterns of interaction among the actors may lead to varying ensuing behaviors (Wasserman and Faust 1994). Based on the nature of the different focal network structural properties, we hypothesize their effects on consumer participation in generating content for a niche product on social media sites.

2.2 Research Model & Hypotheses

Our research model posits that the level of participation attained in a social media site, in terms of the total number of comments gathered for a niche product, would enhance the consumption intention of the product. The level of participation is then determined by six network structural

properties included for the study i.e., inclusiveness, reciprocity, centralization (in-degree, out-degree, betweenness), and core-periphery. Figure 1 depicts our research model.
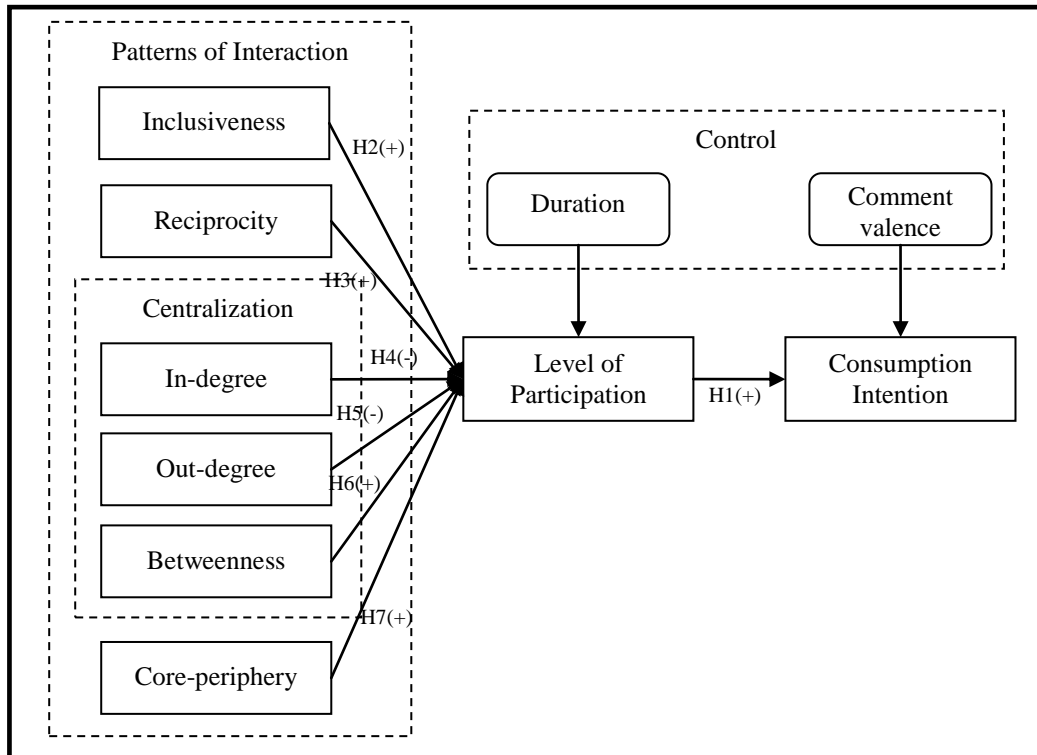

Figure 1.   Research model

2.2.1   Level of Participation and Consumption Intention

In the context of social media, users play a central role in generating content that sustains the media platform (Kaplan and Haenlein 2010). Previous research has shown that such user-generated content e.g., product reviews, can help to promote sales (Brown et al. 2007; Forman et al. 2008). The rationale is that the information contributed by consumers are deemed to be more trustworthy (Brown et al. 2007), and increase the product salience in the minds of consumers (Forman et al. 2008). Specifically, the sharing of information by consumers who have experienced a product or service may inform other consumers about "*the social and psychological consequences of the purchase decision*" (Brown et al. 2007, p. 4). When there is abundant sharing of information about a product, it may increase consumers' awareness and make consumers more informed about the product for their purchase decisions, thus leading to better product sales (Godes and Mayzlin 2004). This may be particularly pertinent for niche products, which previously do not receive adequate attention from the mainstream media (Anderson 2004). Hence, we hypothesize:

H1: The higher the level of participation attained in a social media platform in terms of comments generated for a niche product, the higher the consumption intention of the product.

2.2.2   Inclusiveness and Level of Participation

Inclusiveness reflects the degree of connectivity among actors in a social network. It refers to the number of nodes which are included within the connected parts of the graph (Scott 2000). Mathematically, inclusiveness $= \frac{N_c}{N}$, where N_c represents the number of connected actors and N represents the total number. A network with high inclusiveness implies a minimal presence of isolates, who are nodes with no ties to others (Brass 1995). Isolates have been noted to have a deterring effect on group's enthusiasm to contribute (Roberts and O'Reilly 1979). Conversely, high inclusiveness means most actors in a network interact with each other, which could stimulate insights and contributions from each other (Barnes 1999). In a social media platform for niche products, the engagement of participants in interaction may stimulate the contribution of information and insights that are previously not known about the niche products, and promote the interest of others to join in the discussion by contributing their views. Therefore, we hypothesize:

H2: The greater the inclusiveness exhibited in a social media platform for niche products, the higher the level of participation attained.

2.2.3 Reciprocity and Level of Participation

Reciprocity refers the extent to which ties in a social network are bidirectional (Monge and Contractor 1998). In a directional network, if A contacts B and B replies A, the interaction is considered reciprocal (Wasserman and Faust 1994). Mathematically, $\mathrm{Re}ciprocity = \frac{D_s}{N_c}$, where D_s refers to the number of symmetrical (reciprocated) dyads (pairs of actors) and N_c represents the number of connected nodes. Reciprocity is generally considered to be favorable for network participation and collective behavior. The mutual interaction helps promote more complete information exchange and understanding between two participants, and makes it easier to evoke innovate ideas (Blau 1977). In the context of social media platforms for niche products, the two-way conversation between two participants, who may be motivated by a desire to look more intelligent and more helpful in the eyes of their interlocutors (Sundaram et al. 1998), may lead to more complete and in-depth information about the niche products to be uncovered. This may then stimulate others to participate in the contribution of views and information about the niche products concerned. Thus, we hypothesize:

H3: The greater the reciprocity exhibited in a social media platform for niche products, the higher the level of participation attained.

2.2.4 Centralization and Level of Participation

Network centralization refers to the extent to which a network is centralized around certain actors in terms of connectivity among network members (Freeman 1979; Koku and Wellman 2002). The

mathematical formula of network centralization is
$$C_N = \frac{\sum_{i=1}^{n}(c_{max} - c_i)}{\max[\sum_{i=1}^{n}(c_{max} - c_i)]}$$
, where c_i equals to

member i's centrality, and c_{max} is the maximum centrality among all members. An extreme case of network centralization is a "star" network where everyone is connected to a single actor i.e., maximum centralization. There are several widely employed variants of network centralization measures, including degree centralization, betweenness centralization, and closeness centralization. Of these, closeness centralization demands a high level of network connectivity (Wasserman and Faust 1994), and is more practical when the network is adequately dense. However, online social networks usually have sparse connections and low density, which may not allow closeness centralization to be reliably measured. Hence, we will focus on degree centralization and betweenness centralization in this study.

Degree centralization refers to a network that concentrates on a few actors with high degree centrality. Degree centrality measures an actor's direct ties with others and is calculated by the number of nodes connected to it (Niemincn 1974). In general, a highly centralized network is found to be detriment to network information exchange (Huang and DeSanctis 2005; Rulke and Galaskiewicz 2000; Phang et al. 2007), but most of them do not consider the direction of ties in the network. To test the impact of degree centralization more comprehensively, we delineate between in-degree and out-degree centralizations. Out-degree taps on ties that start from a node, measuring "activities" initiated by the actor; while in-degree calculates ties pointing at the node (Wasserman and Faust, 1994).

Some existing studies hold that degree centralization is detrimental to network participation due to the structural equivalence effect (Burt 1987), which refers to the extent to which two nodes are connected to the same others. A high degree-centralization implies that the centralized nodes connect to most others and act as network "hubs" such that network interactions revolve around them (Wasserman and Faust 1994). This may result in redundancy, as information acquired from the same contacts is likely to be similar, which decreases the possibility of new information discovery. Furthermore, there may be a bottleneck effect since the centralized actors face a high load of interacting with others, which could result in repetitive information being disseminated and a low information quality (Phang et al. 2007). Whether the reason is information redundancy or the bottleneck effects, high network centralization may undermine vibrant participation from the network members, especially since the discussion on niche products may favor an abundance of high quality information that can describe and enlighten such products. The information redundancy effect may be more prevalent in a high in-degree centralized network as most actors interact with certain centralized actors and are exposed to a similar set of information. The bottleneck effect may

be more salient in a high out-degree centralized network due to the considerable cost of engaging in interaction with many others for the centralized actors (Burt 1992). Hence, we hypothesize,

H4: The greater the in-degree centralization exhibited in a social media platform for niche products, the lower the level of participation attained.

H5: The greater the out-degree centralization exhibited in a social media platform for niche products, the lower the level of participation attained.

Betweenness centralization concerns the extent to which a network is concentrated on actors with high betweenness centrality, which measures the fraction of shortest paths between pairs of nodes that pass through the focal node (Freenman 1979, Anthonisse 1971, Otte and Rousseau 2002). Those who possess high betweenness centrality often act as middlemen or gatekeepers in a social network (Wasserman and Faust 1994). They tend to regulate information flow throughout the network, and play an important role in information spreading by bridging structural holes (i.e., nodes that are previously unconnected to each other) (Burt 1992).

Such a role of actors with high betweenness centrality may help to build up weak ties (i.e., connect individuals together) in the usually sparse Internet-based social networks (Hampton and Wellman 2003, Kavanaugh et al. 2005), which facilitates information flow. To illustrate, A and C are two participants in a social media platform set up for discussion on a niche product. They did not previously interact with each other, and have never paid attention to each other's posting. B, being another participant, found A's comment to be interesting and included the information provided in A's comment when engaging in conversation with C. Effectively, B acted as a middleman who facilitates the flow of information between A and C, and may in the process bring them to interact with each other. Therefore, when a network has prominent high betweenness centrality actors, we expect the more seamless flow of information among the participants could aid in deepening understanding about the niche products, which enables and stimulates a higher level of participation. Hence, we hypothesize:

H6: The greater the betweenness centralization exhibited in a social media platform for niche products, the higher the level of participation attained.

2.2.5   Core-periphery and Level of Participation

The core-periphery structure consists of a cohesive core-subgroup in which actors are connected to each other in some maximal sense, and a peripheral subgroup in which actors are more loosely connected to the core-subgroup (Borgatti and Everett 2000). Mathematically the network structure can be expressed as $Cp_N = \sum_{i,j} a_{ij}\delta_{ij}$, $\delta_{ij} = c_i c_j$ (Borgatti and Everett 1999), where a_{ij} indicates the presence/absence of a tie between two actors i and j; c_i and c_j refers to the coreness score of actor i

and actor j respectively; and δ_{ij} indicates the presence/absence of a tie between actors i and j in the ideal core-periphery structure for the network.

Previous studies have shown that the existence of a core-subgroup with high network closure (i.e., everyone in the subgroup is connected to each other) may serve to improve communication leading to a more reliable and coordinated exchange of information (Coleman 1990). Specifically, the actors in the core-subgroup may broadcast a diverse set of perspectives to other members connected to them, and in so doing provide the intellectual stimulation (Blau 1977) that can help generate more ideas from the participants. The core actors may also play the role of a leader who drives other members to participate (Huang and DeSanctis 2005; Phang et al. 2007). Furthermore, the core-subgroup tends to distribute high quality comments from the peripheries, potentially raising people's awareness of originally unknown innovations (Huang and DeSanctis, 2005).

For interaction around niche products that are less known, such characteristics of core-periphery structure may be particularly helpful. The core-subgroup, which may consist of enthusiasts of a niche product, may coordinate discussion around the niche product, and help bring to the attention of others diverse information about the niche product that are previously unknown. This may then stimulate a greater interest of participating in the conversation about the niche product concerned. Hence, we hypothesize

H7: The greater the core-periphery exhibited in a social media platform for niche products, the higher the level of participation attained.

3.   RESEARCH METHOD

In this study, we employed SNA with UCINET v.6.212 (Borgatti et al. 2002) to compute the measures of the network structural properties of interest i.e., inclusiveness, reciprocity, centralization (in-degree, out-degree, betweenness), and core-periphery from the social interaction data collected from the research site, and performed regression analyses using SPSS v.20.0 to test the relationships between the network measures and level of participation, and between level of participation and consumption intention.

3.1   Research context

The data for analysis was collected from a leading consumer review website in China called Douban (www.douban.com). Founded in March 2005, it began as a platform for consumers to share their views and comments on books, and was later extended to also include movies and music. Douban represents an ideal example of social commerce websites pivoted on social media for their business viability. It relies on the consumers to generate content (e.g., book reviews) that sustains the community platform, and earns revenues through activities performed by the consumers. Taking the book section as an example, consumers may initiate a page dedicated for a book, and write her

views and comments on the book. Other consumers may add content to the page as additional comments or as responses to the original comment made by the page creator. On the page they may also exchange views or information with each other about the book. When a consumer bought the book following a link that was designed to appear on the page and directed the consumer to the cooperating merchant's website (e.g., Amazon.cn) for transaction completion, Douban earned a referral fee from the merchant.

In this study, we chose the book section of the website, and focused on books of philosophical genre as they fit as a niche product type. We randomly collected 88 book pages from the philosophical genre that contained a minimum of 10 postings (not including replies) for meaningful social network analysis.

3.2   Variables

3.2.1   Dependent Variables

Douban provides a feature on every book comment page that allows users to click on a button to indicate their intention to read the book concerned, and a hyperlink to the cooperating merchants' website for the interested users to purchase the book. This allows us to capture the consumption intention of the book in terms of the total number of users who clicked on the button to indicate their intention. For level of participation, we recorded the total number of comment postings (including the book reviews and all replies) garnered in each of the 88 collected book comment pages.

3.2.2   Independent Variables

For each of the included book comment pages, we computed the social network measures based on the social interaction data recorded. In electronic networks, a dyadic link is created between two individuals when one responded to another's posting (Ahuja and Galvin 2003). Due to the absence of a direct reply function in Douban, we read the content postings by the participants to determine the network links. For instance, if A responded to points raised by B and C in her posting, a network link from A to B, and from A to C are created. An adjacency matrix was accordingly created to represent the social interaction that occurred in each of the book comment pages. We lay all network participants in the first row and first column in the adjacency matrix sequentially. The presence of a link from person i to person j is labeled 1 in row i, column j; and 0 represents no interaction between them in the matrix. Therefore, the sum of row i represents the out-degree of person i while the sum of column j denotes the in-degree of person j. Eventually, 88 adjacency matrix were generated for input into UCINET for computation of the independent variables i.e., inclusiveness, reciprocity, in-degree centralization, out-degree centralization, betweenness centralization, and core-periphery.

In addition, we included two control variables i.e., comment valence (captured through average user rating of a book) and duration of page existence (the period from the page creation to the time of data collection), which may influence the respective dependent variables (see Figure 1).

3.3 Data Analysis and Results

We performed regression analyses to test the hypotheses. Prior to the hypothesis testing, we performed log transformations on the dependent variables to reduce data skewness, and standardized all measures to avoid scale issues. The inter-construct correlations were also assessed, and no significant issue was detected. The highest inter-construct correlation is 0.68, which is between level of participation and consumption intention. Given that the multicollinearity test indicated no issue (all VIF values are below 5.0), we proceeded with the hypothesis testing. Table 1 below presents the results of the hypothesis testing.

*Dependent variable: Consumption Intention (lg(Number of users who indicated intention to read), Mean = 1133, Std. Deviation = 703), $R^2 = 0.40$							
Variable tested	Hypothesis supported?	Descriptive statistics		t	Sig.	Collinearity statistics	
		Mean	Std. Deviation			Tolerance	VIF
Level of participation	**H1: Yes**	69	51	**7.384**	**0.000**	1.000	1.000
Comment valence	(Control)	4.25	0.21	**2.239**	**0.028**	1.000	1.000
*Dependent variable: Level of Participation (lg(Total number of comment postings), Mean = 69, Std. Deviation = 51), $R^2 = 0.53$							
Variable tested	Hypothesis supported?	Descriptive statistics		t	Sig.	Collinearity statistics	
		Mean	Std. Deviation			Tolerance	VIF
Inclusiveness	**H2: Yes**	0.88	0.09	**5.502**	**0.000**	0.713	1.402
Reciprocity	H3: No	0.12	0.08	1.044	0.300	0.715	1.398
In-degree	H4: No	0.13	0.07	-1.704	0.092	0.882	1.134
Out-degree	**H5: Yes**	0.04	0.03	**-2.765**	**0.007**	0.695	1.440
Betweenness	**H6: Yes**	0.01	0.02	**3.529**	**0.001**	0.706	1.417
Core-periphery	H7: No	0.43	0.14	-1.489	0.140	0.622	1.608
Duration (days)	(Control)	1040	316	-1.261	0.211	0.973	1.027

Table 1.   Results of Hypothesis Testing

The results show that as hypothesized, the level of participation attained in commenting and discussing a niche product leads to an enhanced consumption intention of the book (i.e., H1 is hypothesized). Among the focal network structural properties, inclusiveness and betweenness centralization have a positive effect on the level of participation, (i.e., H2 and H6 are supported), while out-degree centralization has a negative effect as expected (i.e., H5 is supported). However, reciprocity, in-degree centralization, and core-periphery do not have a significant effect on the level of participation (i.e., H3, H4, and H7 are not supported).

4.   DISCUSSION

The purpose of this study has been to investigate, in the context of social media platforms for promoting niche products, how patterns of user interaction could promote the overall user participation level, which subsequently enables commercial value to be better derived in this context. Through analyzing data collected from a website pivoted on social media for its business, our findings provide support that user participation in such a platform (e.g., in generating content such as review of niche products) can indeed lead to favorable commercial benefits. Given the importance of attaining a high level of user participation, it makes sense for the hosting merchant to encourage greater interactions among the users, with the hope that they can stimulate each other in contributing more content to the social media site. However, not all types of interaction could lead to higher participation. Our findings indicated while inclusiveness and betweenness centralization can promote overall participation, out-degree centralization has a detrimental effect.

Three network structural properties included in the study i.e., reciprocity, in-degree centralization, and core-periphery structures, are not found to have a significant effect. For reciprocity, it may be that when two actors engage in a mutual discourse on a niche product such as a philosophical book, they may become highly involved in the debate due to the strong personal subjectivity of individuals in these books. The heated debate between some participants may deter others from joining the discussion, thus impairing the supposedly positive effect of reciprocity in this context. In terms of degree centralization, it is interesting to note that while out-degree centralization has a detrimental effect as expected, it is not so for in-degree centralization. This suggests that the bottleneck effect may be more prevalent for interaction revolving around niche products due to the high demands placed on the provision of unique perspectives on such products, thus causing the out-degree centralized actors to easily feel over burdened to initiate interaction with many others, Due to the same reason, the unfavorable information redundancy effect that is supposedly caused by the in-degree centralization may not be salient in this context. The perspectives provided by a high in-degree centralized actor on a niche product may lead to different subjective interpretations by others, which could help in promoting participation to certain extent. The philosophical discourses among a group of core actors may also lead to a certain depth of discussion content that makes the peripheral members feel challenging to comprehend and hesitant to chip in, thus nullifying the positive effect of the core-periphery structure.

4.1   Theoretical Implications

Our study adds to the existing literature on social media by empirically demonstrating how user participation in content generation may lead to potential commercial benefits for merchants employing social media for their business. In our research context i.e., Douban, higher user participation was shown to promote consumption intention in terms of people indicating their intention to consume a product (i.e., to read a book). Furthermore, we demonstrate such an effect in

the context of using social media for promoting niche products which is recognized to be particularly promising but remains relatively less explored in the literature (Dellarocas et al. 2010).

The research extends the findings by Dellarocas et al. (2010), who indicate that consumers prefer to contribute post-consumption review information for niche products. Specifically, our findings show that the patterns of interaction among the consumers matter when a high level of participation in generating content for a niche product is anticipated. Not every types of interaction that occurred when people discuss about a niche product can lead to a high level of participation. Indeed a highly connected network of interactions in terms of inclusiveness and betweenness centralization could promote participation. Conversely, a highly centralized network in terms of out-degree ties could undermine the level of participation attained, in terms of the total quantity of comments garnered for the niche product concerned.

Related to the preceding implication, our study also offers a more refined understanding of the effect of a centralization structure. In the context of using social medial for facilitating user interaction around niche products, we show that betweenness centralization has a positive effect on user participation, but not degree centralization. Also the effect of degree centralization, which is widely held to be negative in the extant literature (e.g., Costenbader and Valente 2003; Huang and DeSanctis 2005; Phang et al. 2007), depends on whether one examines in-degree or out-degree ties. Our findings indicate that the negative effect of out-degree centralization matters but not in-degree centralization, thus further affirming the value of differentiating between the two in obtaining a deeper understanding about the degree centralization's effect.

4.2   Practical Implications

Noting the importance of encouraging more participation in social media, our study provides guidance to practitioners who contemplate to employ social media for promoting niche products with regard to the kinds of user interaction that should be encouraged / avoided in this specific context. Essentially, our message is that it is not just about providing incentives or administering interventions that can stimulate user interaction, but more importantly the right kinds of interaction.

Our study shows that, while it is important to get people to post their comment or knowledge about a niche product, it is more important to get them connected while doing so i.e., attaining a high level of inclusiveness. This may be achieved by a careful design of features that can facilitate people to engage in conversation with each other. For instance, the tagging of details such as contributors' identity information and their past history of contributions in their postings may allow participants to easily identify each other's interests by directly observing the message postings. Mechanisms should also be provided for participants to easily communicate with others through the platform e.g., by clicking on "reply" or "message" buttons.

It is also important to promote a betweenness centralization structure by identifying those who serve as bridges in the network. Incentives may be provided to these participants to encourage them to

more actively serve this role i.e., in facilitating the flow of information between members who did not previously notice each other but share some common interests, and foster their interaction. For instance, a ranking mechanism could be designed such that more credit points are awarded to the bridging activities, thus accelerating the rise of member status of those who engage in these activities.

Lastly, managers of social media platforms for niche products need to caution the emergence of out-degree centralization structure in the network, which could hurt the overall participation level. When the discussion on a niche product is highly concentrated on a few members with very high out-degree centrality (with the rest having a low centrality), the platform manager may try to make the participation level of members more evenly spread out. Moderators may be hired to actively identify people who have raised interesting views but are not getting the deserving attention, and encourage them to interact with some other members who share similar interests or views with them. However, it should be cautioned the activities performed by the moderators should not be too obtrusive, to the extent that it makes the members feel threatened about their freedom and volition of participating in the social media.

4.3 Limitations and Future Research

The findings from this study need to be interpreted in light of its limitations, which may also point to potential future research directions. First, this study limits its focus on the network level of structural properties. While such properties could be useful in explaining overall participation level and the ensuing effect, other measures that are at the individual (e.g., centrality) and subgroup (e.g., cliques) levels may provide more detailed insights into the micro-dynamics of user interaction and participation on social media platforms. Future research may examine these network measures in investigating how user interaction properties at the individual and group levels may enable firms to better derive commercial value from their social media endeavors.

Second, we capture the commercial value of a social media site using the number of consumers who indicated their intention to consume a product as a proxy of consumption intention. It would have been more ideal to employ more direct measures, such as the actual number of consumers who have bought a product through the social media site, to capture its commercial value. The lack of access to such a direct measure is thus a limitation of this study, which could be an area for further improvement in future research.

Lastly, our investigation was set in a social media site in China, which may limit the generalizability of the findings due to potential cultural influences. Certain cultural factors that may influence the ways people interact and communicate with each other, such as context culture (Hall 1976), could influence the emergence of social network properties in a social media site. Future research may conduct the study in other cultural contexts to examine if our findings remain valid after considering the cultural influences. Despite the limitations, our study offers important theoeretical and practical insights that may faciliate organizations' efforts of materializing the potential of leveraging on user participation in social media for promoting niche products.

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