

COVID-19 and Community Group in Online Purchase Behavior

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Contributor: Weijun Liu, Haiyun Du, Wojciech J. Florkowski

The omicron outbreak affected the online food purchases of those born before the 1990s, males, the less educated, and low-income earners through a community group effect. The internet provides a convenient means of disseminating information, promoting access to local foods, and assuring food access during public health emergencies. Purchasing food online can be further enhanced through standardized management of online communities.

Keywords: online-to-offline sales ; Omicron mutation ; lockdown ; food access ; risk perception ; community group effect

1. Introduction

With the outbreak of the COVID-19 epidemic, food security has become a global concern. In 2021, 828 million people were affected by hunger, an increase of 150 million since the outbreak ^[1]. Trade restrictions, supply chain disruptions, and logistics disturbances following the onset of the COVID-19 pandemic resulted in an unstable food supply ^[2]. In-country lockdowns and measures attempting to control the COVID-19 virus have also adversely affected food access, shopping habits, and consumption ^{[3][4]}. The threats to food security due to the COVID-19 pandemic made assuring the supply of staple foods a top priority for governments ^[5]. For example, consumers made the transition to online community food purchases because of the pandemic ^[6].

An innovative online-to-offline (O2O) channel enabled direct online community purchase of fresh food by a particular community ^[7]. Compared with the traditional e-commerce model that relies on long-distance transportation, the online community purchase is based on a model which provides consumers with convenient distribution services over a short distance by integrating local food and agricultural product sources ^[8]. To safeguard the food security of vulnerable groups, numerous countries have assistance programs ^{[9][10]}. However, public health opportunities and innovations can emerge from digital food retail services to support healthy eating and the needs of vulnerable populations ^[11]. Ultimately, digital food retail selling will persist. During the Omicron outbreak, a COVID-19 variant, 92.81% of the surveyed respondents bought food, especially vegetables, through online community purchases between March and May 2022. The group is a key to online community food purchases. A distinguishing characteristic is that consumers must first join an online group. Within the group, members actively interact and share information to decide what to purchase. Online community purchases combine discounted pricing for group members with a personalized shopping experience ^[12].

2. Online Purchase Behavior

2.1. The Definition of Community Group Effect and Online Community Purchase

The online community purchase follows a novel online e-commerce model that focuses on integrating local and foreign food supply to facilitate access to staples during emergencies such as the COVID-19 pandemic. The approach combines the characteristics of community and online purchases. The interactivity, proximity, and familiarity of online community purchases can indirectly affect consumer purchase intention and behavior ^[13]. In 2010, the Meituan Company started an online community purchase business. Soon thereafter, WeChat and Pinduoduo followed ^[8].

The community group effect was originally applied to describe bacterial colony behavior. Extended to the social sciences, the community group effect restricts, affects, and changes the behavior of group members ^[14]. When studying the relationship between individual and group behavior, Charness et al. ^[15] found that individual behavior is affected by behavior of others in the group, causing a reaction. Sutter ^[16] found that the group effect can significantly affect its members' individual behavior. Ratner et al. ^[17] indicated that when one member's consumption behavior changes, other members are also affected. Once individuals are affected by internal pressure, they tend to make the same decisions as

others to reduce the risk of information asymmetry. Consumers believe that others have more information and they make the same purchase decision ^[18].

The group is a distinctive feature of online community purchases compared with other types of online e-commerce. A widely recognized definition of the term “group” has not yet been agreed upon because of the varying nature of group composition. From the social relations perspective, a group is guided by social norms, its composition is relatively stable, members abide by consistent codes of conduct and values, and they decide about collective action ^[19]. From the perspective of network relationships, the concept of group integrates the characteristics of socialization. From the perspective of social relations, there are obvious social characteristics in the definition of group. From the perspective of social networking, Siemens ^[20] determined that online social behavior is interaction and sharing within a group, and, in an online group, members develop a sense of community. It is difficult to distinguish between a group and an online group, and the two terms are used interchangeably ^[21].

2.2. The COVID-19 Pandemic and Online Community Purchase

Since the outbreak of COVID-19, many scholars have attempted to measure its impact. Existing studies have used lockdown severity ^[22] and the number of confirmed cases ^[23] to measure pandemic effects. In terms of food security and consumption, the impact of the COVID-19 pandemic has been associated with food shortages and risk perception. For example, Mardones et al. ^[24] found that the pandemic had a major impact on the global food security system while affecting public health. Hakim et al. ^[25] found that consumer risk perception gradually eased with increasing information about the epidemic.

Governments at all levels have taken a series of prevention and control measures to attempt to prevent the spread of COVID-19 ^[26]. Liu et al. ^[22] distinguished between mild and severe COVID-19 effects and found that residents in different regions were affected differently. At the regional level, Wen et al. ^[27] differentiated the impact of the epidemic in high-, medium-high-, medium-, and low-risk areas and found that regions differed in their adoption of epidemic prevention and control measures. In severely affected areas, travel was limited and online purchases became an important source of food.

2.3. The Omicron Outbreak and Community Group Effect

The COVID-19 pandemic restricted the consumer’s ability to obtain information about food, but the emergence of the online group has reversed that effect, enabling access to information. Obtaining information to purchase food motivated group participation. The interactivity within the group distinguishes the online community purchase from the traditional online shopping mode. The mutual trust within the group helps to fulfill member consumption needs ^[28]. Chan et al. ^[29] applied the theory of resource exchange to study how interactivity affects reciprocity and thus consumer purchase intentions. In addition to the actual expenditure and opportunity costs, residents tend to ignore the cost of collecting information. The provision and exchange of information within the group greatly reduces its cost and informs purchase decisions.

During the COVID-19 pandemic, online groups have become the chief participants in the production, transmission, and dissemination of information by virtue of information technology. The early-emerging groups accounted for insignificant sales values, but as information technology matured and transactions were not constrained by traditional geographical boundaries, the groups produced greater sales values ^[30]. Continuous information production and transmission within the group attract additional urban residents to join because of the convenience and easy access to information ^[21].

2.4. The Omicron Outbreak, Community Group Effects, and Online Community Food Purchases

Compared with the traditional e-commerce model, the online community purchase has both retail food purchase and social attributes ^[31]. Such attributes did not originally describe online purchase behavior. In response to the COVID-19 pandemic and the induced food shortages and increased risk perception, urban residents organized groups, collected information, and collectively undertook online food purchases.

The community group effect is an important motivation for consumers to make online community food purchases ^[32]. Loxton et al. ^[33] found that the severity of the pandemic curbed not only traditional social behavior, but also consumer purchase behavior. The willingness to consume is affected by others’ purchasing decisions ^[16]. Therefore, it can be inferred that the more residents in a group, the more willing they will be to make online community food purchases.

During the COVID-19 pandemic lockdowns, the community group effect could only be expressed in online purchases. Ben et al. ^[34] found that because of policy measures, such as maintaining a certain social distance, consumers choose online

community food purchases using cell phones. After exchanging information within the group, group members can assure their food security through an online community food purchase.

2.5. Summary

The survey data collected from 1168 residents showed that the COVID-19 pandemic increased and accelerated residents' participation in online food community shopping, as consumers had to adapt to new policies to respond to food security problems. The research findings revealed that the heightened severity of lockdowns and concerns about food security amplified the frequency of residents' online food purchases. Standardized management of online communities could further boost these purchases. The mechanism analysis showed that the Omicron outbreak influenced online food purchases through a community group effect.

The results indicated that the lockdowns and the threats to household food security had a significant positive effect on the frequency of online community food purchases. Estimation results of equation showed that a respondent's risk perception lacked significant effect on the frequency of online food purchases. In contrast, lockdowns and food shortages showed both positive and significant Omicron outbreak effects on online group food purchases. The results confirmed that the Omicron outbreak significantly affected the online group food purchases of urban residents. Earlier, Qi et al. [35] and Marinković et al. [36] arrived at similar conclusions. This was due to the fact that, by increasing the frequency of purchases, residents could obtain sufficient food to cope with the impact of COVID-19. However, risk perception failed to produce a significant effect of the Omicron outbreaks on online community food purchases. A possible reason for this outcome was the scope of the lockdowns, which covered the whole of Shanghai, limiting differences in resident risk perception.

Studies indicated that the lockdowns, the threats to household food security, and the respondents' risk perception all had significant positive impacts on community effects. The results showed that the Omicron outbreak significantly influenced the community group effect and indicated that it increased the threats to household food security and the respondents' risk perception. These results are consistent with the findings of Liang et al., who found that most households purchased food with assistance from community-based grassroots organizations during the lockdown [37]. This is due to the fact that the outbreak of the mutated virus made it difficult for residents to obtain information about food availability, and more information could be obtained by joining community groups.

The results of the mediation effect model showed that the total effect was significant and positive in the lockdown level and food shortage equations. The indirect effect of the community group effect had a similar influence. In the case of risk perception, the direct effect was significant and negative, while the indirect effect was positive. The study shows what Rucker et al. [38] called the "suppression effect", indicating that risk perception directly inhibited online community food purchases. However, the indirect effect of lockdowns and food security through the community group effect was greater than the indirect effect of risk perception. It is plausible that residents believed that online community food purchases increased their own safety, so they limited their purchase frequency. However, Shanghai was subject to a lockdown, and finding necessities was the most pressing need. Compared to food security, respondent risk perception was relatively weak. Risk perception seemed to increase the frequency of online food purchases through the community group effect. Overall, the Omicron outbreak encouraged residents to actively participate in information collection and exchange within the community group and to take collective action to ensure their own food security.

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