

Evolution and Implications During the Epidemic

--Contemplation on the Robust Communities amid the Group Purchase Trend amid the Shanghai Outbreak

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Abstract: In March 2020, Shanghai experienced an outbreak of an epidemic and implemented several months of territory-wide static management. The community was the smallest closure and control unit for grid control. This thesis uses questionnaire interviews, literature review, and correlation analysis to study the phenomenon of community chiefs and regimentation during the Shanghai outbreak, taking the Shannan Estate in Shanghai as an example. This paper reports that the headman model has improved the mechanism and mode of grassroots work, tapped elite talents, and established a mechanism of community self-organisation and multi-party participation oriented to the needs of residents in the social aspect. In the spatial aspect, the construction of a five-minute community living circle was combined with the improvement of the mechanism of composite use of community facilities. This statement will have a positive impact on strengthening community resilience and promoting sustainable development in the post-epidemic era.

Keywords: Community group buying, Community leaders, Resilient Communities, Epidemic

1. Introduction

During the months following the outbreak of the epidemic in Shanghai, the community became the smallest unit of containment. The market supply chain was disrupted, and community grassroots organizations were overloaded. Many ordinary citizens volunteered to become 'Shanghai Group Leaders', organizing production, distribution, and dispensing to ensure the orderly functioning of the community. This became a highlight of community self-governance during the outbreak.

The widespread emergence of the phenomenon of group purchasing by group leaders has stimulated reflection on the construction of resilient communities. This study gathered background information and relevant data through questionnaire interviews. Then, it analysed the literature and established a community resilience evaluation index system under the control of the epidemic, with the help of the resilient community theory. The organizational mechanism of community group purchasing was analysed at the economic, social, and spatial levels using the correlation analysis method.

This thesis aims to provide social and spatial insights for the resilience and sustainable development of communities in the post-epidemic era by exploring the story of the 'chief'. The study concludes with practical suggestions for city managers and community residents to promote community resilience and sustainable development.

2. Community Resilience Assessment System

2.1. Resilient Cities and Communities

Community: The concept of community originated from the German sociologist Tennessee and is distinguished from the concept of society. While the concept of society focuses more on karmic relationships constructed on the basis of interests, the early concept of community mainly focuses on social relationships with non-material attributes rather than their spatial attributes, such as blood and geographic communities, etc. In the contemporary context of the term community, scholars specializing in architecture emphasize its spatial connotation. In the contemporary context of the term community, scholars in architecture-related disciplines have emphasized its spatial connotation, understanding it as not only carrying social structures and accommodating social activities, but also as an integrated carrier of spatial and administrative units [1].

Conventional planning attempts to defend against risk by rigid means, failing to recognise the capacity of urban socio-economic complex ecosystems to resist, recover and learn. In the face of public emergencies, cities urgently need to introduce a more flexible and adaptive approach. The concept of resilience provides new directions and ideas for cities to deal with public emergencies. A resilient city is an urban system that is able to absorb external disturbances quickly and maintain its main functional structure in the face of shocks. It aims to enhance the self-recovery ability of cities and achieve a stable state through internal adjustment [2].

2.2. Research Background

Figure 1 shows the implementation of grid-based management from 16 March to 28 March, local static management from 28 March to 1 April, territorial static management from 1 April to 1 June, and progressive unsealing from 1 June. In 2020, when Shanghai went into full static management due to the epidemic, the supply chain of supplies in the region came to a standstill, and the problem of livelihood protection became dire. Shanghai residents are waiting for community workers to deliver blind boxes of supplies. Bread has become a luxury item and rice is running out, exposing the last vestiges of the Shanghai people's dilemma. During the closure and control period, a group of ordinary citizens known as the 'Shanghai Group Leader' stood out by using community group purchasing to protect their livelihoods. They demonstrated the importance of collective action in times of material dilemma.

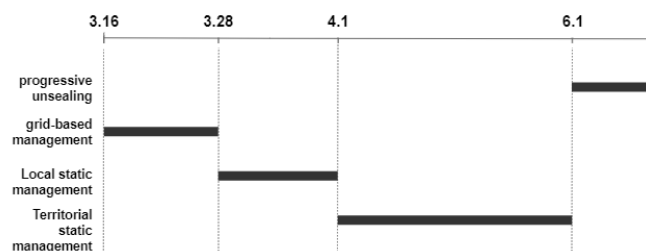


Figure 1: Time line for sealing control

2.3. Research System: Sample Study and Community Resilience Assessment System

Shannan Estate, located at 151-187 (single) South Shaanxi Road, Huangpu District, Shanghai, is one of the second batch of outstanding historical buildings in Shanghai and belongs to a typical old neighbourhood in Shanghai. At the beginning of this closure, the residents of Shannan Estate initiated a community group purchasing activity in the face of insufficient supply. By fully mobilising the internal strength of the community, the group leader formed a mature and efficient working mechanism to solve the problem of material shortage, which is of typical significance.

This study will comprehensively examine the indicators of the community resilience assessment system(see Figure 2), including economic, social, and spatial resilience. Economic resilience will focus on the economic status of relevant residents and the factors that condition it. Social resilience will consider the physical structure of society, the Troika, and community organizations. Spatial resilience will examine the attributes of the life cycle, community, and community space.

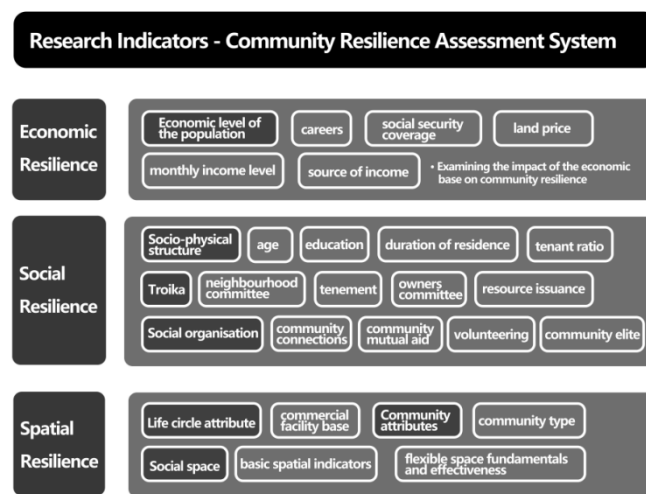


Figure 2: Research indicators-community resilience assessment system

3. Analysis of Community Resilience in Group Purchasing in Shannan Estate

3.1. Overview of Group Purchasing: Process Analysis

3.1.1. Background Information - Overview of Shannan Estate

Located in a prime area, this residential neighbourhood provides convenient access to a range of high-quality amenities within a 500-metre radius. The historic Park Lane residence, dating back to 1930, is a remarkable architectural landmark with its unique monolithic design. The area is characterised by charming lanes and bustling streets lined with diverse shops. The neighbourhood is home to around 180 residents, mostly indigenous, including a significant elderly population and conservatory teachers. It exudes cultural richness, but social dynamics reveal exclusionary patterns, with a larger number of residents asserting dominance over a smaller number, leading to divisions within the community. This is particularly evident on Nan Chang Road.

3.1.2. Research Method

The questionnaire of this study consists of two parts: the first part is demographic information including 19 questions on gender, age, education and literacy; the second part consists of 10 questions on role assumption in group shopping, demand for goods, community relations and satisfaction (see

Figure 3). The formal survey was conducted in August 2023 and the reference population consisted mainly of Shannan Estate residents. In this study, 63 valid data were collected in the pre-survey stage using the snowball method to analyse the reliability and validity of the initial questionnaire. The reliability and validity of the questionnaire were examined using SPSS 26.0 statistical analysis software, and the results showed that the Cronbach's alpha reliability coefficient was 0.744 and the KMO=0.812, which had good reliability and validity, and the characteristics of the respondents were reflected with authenticity and validity. The R2 of the constructed model is 0.421, the significance is $0.001 < 0.05$, the Durbin-Watson index is $1.929 \approx 2.0$, and the residuals are in line with the normal distribution.

Multiple linear regression modelling $Y=0.186J1+0.178J2+0.181J3-0.234S1+0.110S2+0.037S3+0.066S4-0.046S5+0.014S6-0.022S7+0.226S8-0.153S9+0.022S10-0.307S11-0.034S12+0.315s13-0.162s14+0.269s15+0.079s16+0.288k1$.

Resilience dimension	Norm	Date type	Tenden- cies	Descriptions	
Economic resilience	J1 Occupational groups	Notional data	/	Working=2; Retired=1; Unemployed=0	
	J2 Monthly salary	Ordinal data	+	Less than \$3000=1 ; \$3000-\$5000=2 ; \$5000-\$10000=3; \$15000-\$30000=4; Over \$30,000=5	
	J3 Payment of social security	Notional data	+	Yes=2; No=1	
Social resilience	S1 Age	Ordinal data	+	Under 18=1; 18-45=2; 46-64=3; 65 and over=4	
	S2 Educational attainment	Ordinal data	+	College degree=1 ; Bachelor's degree=2 ; Master's degree=3; Doctor degree or above=4	
	S3 Duration of residence	Ordinal data	+	Within 1 year=1 ; 1-5 years=2 ; 5-10 years=3 ; 10-20years=4; More than 20 years=5	
	S4 Tenement	Notional data	+	Yes=1; No=2	
	S5 Unit number classification	Notional data	/	Large size =2; Small size=1; Else=0	
	S6 Pre-seal familiarity	Ordinal data	+	Less than 5 persons=1 ; 5-10 persons=2 ; 10-20 persons=3; 20 or more=4	
	S7 Willingness to participate in party activities after closure	Scalar data	+	Unwanted=1 ; Be indifferent=2 ; Wanted=3 ; Very keen=4	
	S8 Volunteerism Index	Scalar data	+	Likert scale	Average frequency of services by type
	S9 Mutual assistance in the community	Scalar data	+		/
	S10 Information sharing	Scalar data	+		/
	S11 Distribution of government supplies to maintain a normal standard of living	Scalar data	+		/
	S12 Paradoxical Index	Scalar data	+	Likert scale	Average number of results for each type of conflict
	S13 Degree of conflict resolution	Scalar data	+		/
	S14 Conflict resolution capacity of the Group	Scalar data	+		Sum of the results of the rankings of the Head of Mission and the Working Group on Group Purchasing
	S15 Evaluation by Mission Leaders and Mission Working Groups	Scalar data	+		/
	S16 The role of the troika	Scalar data	+	Likert scale	Average of the results of the evaluation of neighbourhood committees, owners' committees and properties
	K1 Overall evaluation of the space	Scalar data	+		Integration of the results of space evaluations by the Head of Mission, the Mission Working Group and residents
Integrated resilience	Overall satisfaction	Scalar data	+	Likert scale	/

Figure 3: Standardised forms

The analysis framework comprises three parts: data collection, data organisation, and model construction and analysis (see Figure 4). First, this research conducts reliability and validity analyses on the received questionnaires. It discards questionnaires with low reliability and validity and adjust the questions accordingly. It recovers questionnaires with high reliability and validity and characterise the basic information of the samples. The indicators were screened and standardised. Subsequently, a multiple linear regression model was constructed, and the influencing factors were analysed.

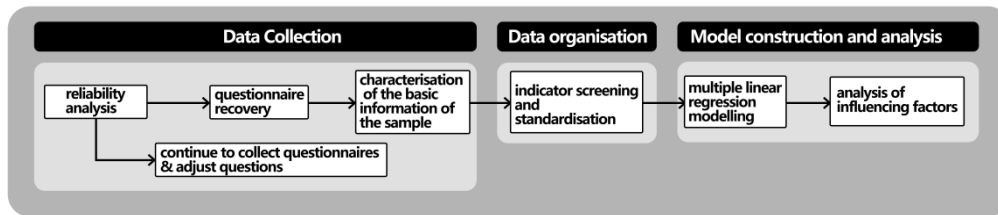


Figure 4: Framework of analysis

3.1.3. Analysis of Influencing Factors

The distribution of goods by the government has a significant impact on overall resilience. This is evident in Shannan Estate, where deficiencies in distribution notably reduce comprehensive resilience. Therefore, policy-driven indicators are crucial in strengthening community capital resilience. Other factors that closely follow include conflict resolution, space evaluation, and group leadership assessment, which greatly influence satisfaction despite challenges with government supplies. During health emergencies, economic indicators have minimal impact on satisfaction. Additionally, the size of residential units shows negligible impact, indicating similar satisfaction levels across different arrangements within Shannan Estate.

3.2. The Material Basis of Group Purchasing: Economic Resilience

3.2.1. The Stability of Economic Attributes and Their Provision of a Strong Material Foundation

Economic resilience refers to the capacity of a community to provide financial security in the face of unforeseen events [3]. Shannan Estate is situated in the heart of Shanghai, which boasts a diverse and high-quality economic environment. Meanwhile, according to the questionnaire, the respondents' average monthly personal income ranges from RMB 5,000 to RMB 10,000. The working population's average monthly income is RMB 10,000 to RMB 15,000, with an employment rate of 97.7%. They have a stable source of occupation and income, and over 70% of them have social security coverage. Furthermore, the prime location of the southern Shaanxi estate results in a higher land price (with an average house price of 120,000 yuan/m² and an average monthly rent of 9,300 yuan), which is indicative of the higher economic status of its residents.

In Shannan Estate, the community environment and residents have stable economic attributes. This can help avoid economic shocks caused by a single economic environment and make it easier to obtain diversified materials and services during epidemic group purchases. Additionally, it can better resist the economic shocks brought by epidemics to individuals and reduce financial constraints on the choice of materials for group purchases.

3.2.2. Variations in Population Economic Levels Exert Minimal Influence on Group Purchases

The interviews reveal that residents with varying economic levels pursue different qualities of life, which can sometimes lead to minor conflicts in group purchasing. However, the group leader is able to mediate and reach a consensus, resolving conflicts at an early stage. This approach has left residents satisfied. It is important to note that subjective evaluations have been excluded, and clear, objective language has been used throughout the text. The language is formal, and precise word choice has been employed to convey meaning accurately. The text is grammatically correct, and conventional

structure has been maintained. The content of the improved text closely reflects that of the original text, with no additional aspects added.

In group purchasing, economic differences may cause minor conflicts, but they do not affect group satisfaction due to the timely mediation by the group leader.

3.3. Actor Networks in Group Buying: Social Resilience

3.3.1. Grassroots Organization Resilience: Weak Overall Performance of the Troika with Severe Material Shortages

During the initial stages, community management efforts were coordinated with the help of neighborhood committees and tenements. However, as infections and transmissions continued to rise in subsequent stages, the effectiveness of neighborhood management began to stagnate. The shortage of material resources on the streets, combined with declining quality standards, has significantly impeded the community's ability to maintain normal life for its residents.

3.3.2. Social Network Resilience: Group Buying Campaigns as Catalysts

Prior to the epidemic, residents were not highly familiar with one another. Due to economic and cultural factors, social relationships among residents were limited to a small circle of acquaintances. In fact, over 60% of residents knew fewer than 10 people in their neighbourhood.

During the epidemic, residents have become more familiar with each other, with the number of people who know fewer than 10 people in their neighbourhood halving and the social network among residents strengthening.

3.3.3. Community Self-Organized Resilience: Community Elites as Key Actors Constructing Actor Networks

This research focuses on community self-organization resilience, which is particularly crucial during epidemics. It examines how the head of the Mission can effectively consolidate resources amidst market failures and limited neighborhood committee effectiveness to facilitate successful group purchases, aiding communities during epidemic closures. The Head of Group Purchase, acting as community elites adept in resource management, plays a central role. Observations during the Shanghai epidemic have revealed that exemplary group leaders share similar attributes, including high levels of education, strong communication skills, a commitment to community welfare, and a selfless attitude. Questionnaire responses (7.55% highly competent, 92.45% very competent) and interviews confirm the dedication, competence, and elite potential of Shan'an Estate's group leaders, highlighting their pivotal role in group purchasing.

3.3.4. Group Buying Social Network

Team leaders play a crucial role in group buying by mobilising community resources and establishing decentralised networks. They must balance workload and support group operations. Grassroots workers may be less effective, and neighbourhood committees require analysis for improvement. Head Juan emphasises social mobilisation over management, utilising community elites to activate group power. To address grassroots and market failures during epidemics, community resources must be consolidated for group buying. Activating community actors through shared values, rules, trust-building, and decentralization is essential for effective governance. It is vital to secure support from neighborhood committees, property managers, and suppliers. Communication is key to fostering collaboration among stakeholders, particularly in group buying initiatives.

3.4. Operational Space for Group Buying: Spatial Resilience

Community spatial resilience as a functional basis for community response to public health emergencies [3]. The resilience of living area amenities is crucial for residential freedom [4]. However, managing historic preservation buildings poses a challenge to community attribute resilience. The appointment of the head of Shannan Estate Centre is significant, given the neighbourhood's aged and dilapidated condition during the epidemic. The property rights of the area, previously managed by various entities such as the Housing Authority and the Municipal Planning Bureau, have now been transferred to the State and are overseen by the existing property company. However, there is minimal systematic organization or owners' committees in place. As a result, during the epidemic, the neighborhood committee faced immense pressure without any external resident support. To tackle this issue, the group leader established the Watchdog Group, which shared the workload of the neighbourhood committee and created a self-sustaining network of action. Additionally, a favourable spatial environment improves the resilience of group buying. Despite its age, Shannan Estate offers superior spatial resources, such as a high road density and a fitness plaza that was repurposed as a core distribution space during the epidemic. This underscores the crucial role of flexible spatial resources in facilitating group purchases.

4. Resilience Enhancement Strategies

In the future, neighbourhood committees should optimise their workforce, devolve power to encourage grassroots involvement, and streamline procedures to reduce bureaucratic pressure. Improving the reward and punishment mechanism is crucial for enhancing efficiency.

It is essential to address the misunderstood 'management' attributes of neighbourhood committees and their disconnected mode of operation with residents. It is necessary to learn from the community participation model of group purchasing organized by the Chief Executive and the TIC's approach. After the epidemic, neighborhood committees should focus on regular communication with residents to foster trust and community responsibility [5]. During crises such as an epidemic outbreak, it is vital to mobilize and empower residents to voice opinions and suggestions. It is critical to understand residents' psychology to reach a consensus and establish common action rules.

Facilitating the participation of various stakeholders in community governance is necessary. This can be achieved by tapping into potential elite resources of community leaders and group purchasing working groups to bolster the industry committee team representing residents' interests [6]. Creating an environment for multi-subject participation enhances crisis governance capacity, fostering a pluralistic, connected, and inclusive community during crises.

5. Conclusion

As communities face the tremendous impact of disasters under public health emergencies, enhancing community resilience to effectively cope with the pressure and reduce the impact of epidemics has become an important goal of community building. This paper constructs a strategic framework for community resilience enhancement based on the characteristics of public health emergencies in Shannan Estate in Shanghai, and the connotation of community resilience. The role of spatial resilience in this paper has not been explored in depth, and in the future, the research will focus on the spatial attributes of the circle of life and other aspects of the study. In future community planning and construction work, it is necessary to actively summarise domestic and international experience and analyse the lessons learned from previous events, strengthen the integration of resilience thinking in community planning and construction, and even prepare resilient community construction standards and resilient community planning, and accordingly support the operability of the emergency plan.

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