



Research on the transformation of the shantytowns based on investigation and evaluation model

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Abstract Study on the development status of Deyang city shantytowns project through a questionnaire of the target group, understanding of the relevant target groups concerning the shantytowns existed problems and its influencing factors, as well as the main reasons leading to these factors, using hierarchical analysis method, to make evaluation of various factors, and to build a shantytowns housing security performance evaluation index system, so that by analysis of the problems and the reasons, the suggestions and countermeasures are put forward for the transformation of the shantytowns.

Keywords shantytowns transformation; current situation investigation; data analysis; problem analysis

Introduction

Ministry of Housing and Urban- Rural Construction statistics show that a large scale of shantytowns transformation, about 50 million square meters of shantytowns, has been carried out in China in the past few years, and the housing conditions of nearly 1 million families have been improved. However, the transformation of various types of shantytowns is still arduous. According to the survey, up to this date, there are still more than 12 million of low-income urban families and a small amount of middle-income families living in shantytowns. In addition, there are many villages in the city and the old and dilapidated town houses. The shantytowns are dilapidated and crowded with primitive kitchen facilities hiding with potential risks. Through the design of the questionnaire, the author can study the influencing factors of the problems so as to put forward suggestions and countermeasures for shantytowns transformation.

Research status at home and abroad

With the transformation of shantytowns in the country has attracted more and more attention, the domestic scholars are constantly strengthening the research on the evaluation of the shantytowns and urban transformation. In our country, the evaluation of shantytowns and urban transformation has gradually become a hot research field; domestic scholars are in a continuous theoretical and practical research stage.

Liu Jing [1] (2015) in his master's paper, the transformation of shanty towns in Beijing city were studied, so as to understand the problem of the city shantytowns, analyzes the causes, puts forward solving measures, provide a reference for the transformation and construction of urbanization, promote the development of the city. Zhou Jin [2] (2015) through the research project of China's urban dilapidated, mentioned renovation project requires a large amount of capital investment in each stage, so the PPP project financing model applied to shantytowns project, discusses the feasibility and operability, relevant suggestions at the end of the PPP mode application to shantytowns. Gao Guangchun [3] (2015) conducted the research on the financing mode of transformation of shanty towns, and take the Liaoning shantytowns case as an example. In his paper, the author analyzes the characteristics of the financing model and the main problems, puts forward some suggestions on how to enhance



the transparency of policy incentives, introduce the competition mechanism and mobilize the participation of commercial funds etc..

Back in the early twentieth century, foreign scholars of the theoretical realm have begun to study the root causes, the theoretical basis of the concept and the practical significance ect. At the same time, scholars also did more in-depth studies of the shantytowns. Moqvist L [4] (2002), a professor specializing in the study of urban transformation in the United States, believed that in the different environment, the characteristics of the transformation of the shantytowns are constantly changed in the developing process but the integrity , systematicness and dynamics are its basic characteristics. Seong-Kyu Ha [5] (2004) examines the living conditions of newly built squatter settlements and the problem new shantytowns urban marginalized in Seoul. Even though owner-occupation in the substandard residential areas is illegal, the squatters felt more comfortable than any other residential areas because that they do not worry about any burden of rent increases. Grove J M [6] (2009) stated that people in developing countries have relocated from the countryside to towns and cities of every size during the past 50 years. The urban population on a global basis is projected by the UN to climb to 61% by 2030 and eventually reach a dynamic equilibrium of approximately 80% urban to 20% rural dwellers that will persist for the foreseeable future. As people gradually relocated, shantytowns transformation becomes inevitable.

Case Analysis

Project overview of a city of shantytowns

Since the construction of Deyang city, with the continuous development of the city, the built-up area has reached 70 square kilometers, the population of the central city has reached 700 thousand. And in the urban planning area, 45 shantytowns were gradually formed with a total area of 1162 acres. After the Wenchuan earthquake, combined with the restoration and reconstruction of urban housing, the city shantytowns further mentioned the agenda, since 2009, a large area to start the transformation. Up to now, 31 of the 45 shantytowns have been approved by the municipal government to enter the implementation phase, and the total resettlement households are 5500, 14000 people, and the total construction area of the project is 2.4 million square meters including 770 thousand square meters of also built resettlement housing.

A transformation project involving 397 households, covering more than 60 acres, about 200 two-story houses, is the "second floor room" built in the 1990s for agricultural to non-agricultural residents. As for the houses in the scope of the transformation project, the housing structure is irrational, and the space is narrow with poor lighting and aging pipeline. Besides, the community environment and health status are poor, and the supporting facilities are not perfect. The harsh living environment not only brings difficulties to the daily life of the residents, but also affects the life and property safety of them.

The design of the questionnaire

The design ideas of the questionnaire

In order to have a clear understanding of the current situation of Deyang city shantytowns, this paper design the related questionnaire from an empirical point of view by choosing a shantytown reconstruction project as an example, the authors have carried on the questionnaire design, and focus on the collection of the opinions and suggestions of the experts.

The main contents of the questionnaire

- The intuitive feelings of the target groups for the transformation of the results of the shantytowns.
- The content of the impact on target groups for the transformation of shantytowns.
- Visual perception of target groups on the results of shantytowns.
- Target groups for the impact of shantytowns on their own content.

What the focal points of expert's inquiries are opinions about the demolition scheme, the analysis of the reasons that affect the transformation of shantytowns, and the suggestions on how to speed up the shantytowns transformation.



Selection of survey objects

In summary, with the social development and progress of the times, the current requirements of the residents of shantytowns are no longer confined to have a house to live; their requirements are a higher degree of participation and access to a sense of acquisition. Based on the analysis, in the selected of target groups, this study mainly choose the typical survey. In this survey, 240 questionnaires were issued, 221 valid questionnaires were recovered, and the recovery rate was 92.08%.

At the same time, in view of the problems existing in the shantytowns, five experts were selected to involve in policy research, development and promotion of the shantytowns, and through the inquiry the professional opinions and suggestions were collected.

Analysis of the results of the questionnaire

Transformation of inputs

The data from Table 1 - Table 3 data can be drawn, 37.1% of the respondents believe that capital investment is sufficient, 34.9% think that staffing is good, 34.9% of the respondents do not know the allocation of resources. This shows that the allocation of resources in the configuration, the transformation project needs to be improved.

Table 1: Capital investment

Options	Frequency	Percentage
Adequate	82	37.1
General	68	22.1
Insufficient	15	6.7
Not clear	63	20.9

Table 2: Staffing

Options	Frequency	Percentage
Complete	32	15.9
Have institutions	70	34.9
No institutions	66	25.1
Have part-time staff	66	25.1

Table 3: Resource allocation

Options	Frequency	Percentage
In place	46	18.4
General	55	22.1
Not in place	63	24.9
Not clear	71	34.9

Table 4: Supervision degree survey

Options	Frequency	Percentage
Strict	32	14.5
General	77	34.8
Not strict	45	20.4
Not clear	67	30.3

Transformation process supervision

From the data in Table 4 can be drawn, 34.8% of the respondents believe that the general supervision, 30.3% of the view is unclear. This shows that in terms of regulation, the overall attitude of the investigator is more dull.

Intuitive perception

Table 5: An intuitive perception of the results of the transformation of shantytowns survey

Option content	Frequency	Percentage
Resettlement satisfaction	63	28.5
housing commonly	55	24.9
layout dissatisfied	46	20.8
satisfaction unclear	57	25.8
Resettlement satisfaction	22	33.9
housing commonly	75	10.0
quality dissatisfied	47	21.3
satisfaction unclear	77	34.8



Resettlement satisfaction	68	30.8
housing commonly	72	32.6
facilities dissatisfied	63	28.5
satisfaction unclear	18	8.1

The data can be drawn from table 5, 28.5% of the respondents were satisfied with the apartment design, 33.9% of the people on the quality of satisfaction, 30.8% of the respondents feel the general for the supporting facilities. This shows that in terms of satisfaction, the overall attitude of investigators is not satisfied.

Its own influence

Table 6: An investigation on the influence of the transformation of the shantytowns

Option content		Frequency	Percentage
Property management	Greatly improved	78	35.3
	improved	67	30.3
	almost	51	23.1
	unclear	25	11.3
Residential environment	Greatly improved	79	35.3
	improved	87	39.4
	almost	34	15.4
Life convenience	unclear	21	9.9
	Greatly improved	62	28.1
	improved	19	8.6
	almost	88	39.8
	unclear	52	23.5

Conclusions can be drawn from table 6, the total 65.6% of the surveyed think property management has greatly improved or improved than before, 74.7% think residential environment improved, 39.8% of the surveyed think life convenience almost as before. This shows that in terms of its own influence, the respondents believe that, it is greatly improved or improved compared with the previous, but life is not as convenient as before after the implementation of closed- management of the residential area.

Construction of evaluation index

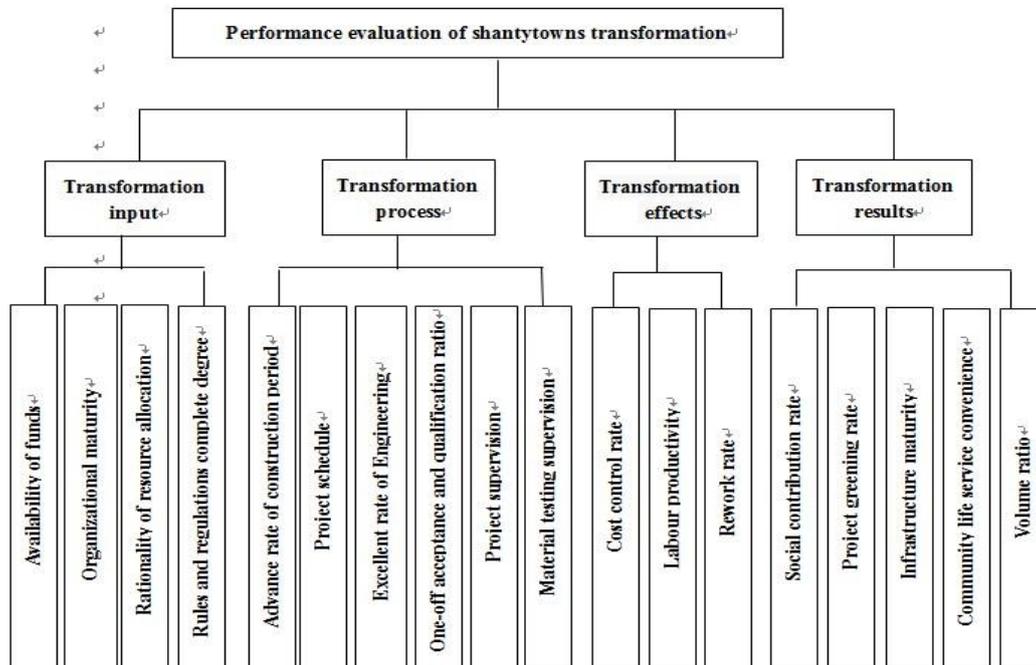


Figure 1: Performance evaluation of shantytowns transformation

Building a scientific and reasonable performance evaluation index system is the most basic requirements of performance evaluation, which also determines whether the performance evaluation can objectively and



comprehensively reflect the reality of the evaluation objects. Under the principle of scientific and reliable, comprehensive and systematic, practical and feasible, as well as the principles of data desirability, and combined with the specific circumstances of shantytowns, the social factors of the project evaluation are established in this paper, and the analysis is carried out to get the following comprehensive performance evaluation factors.

Determination of the weight of index

Analytic Hierarchy Process (refers to as AHP) is to decompose the elements which are always related to the decision to the target, the criterion, the plan, and so on, and then to make the qualitative and quantitative analysis. Through the AHP, the weight of each factor in the whole system is determined.

Establish judgment matrix

Through the comparison of various indicators, a judgment matrix is established.

Table 7: Judgment Matrix

Comparison of the factors before and after	Index
Equally important	1
Not so important	3
Obviously important	5
Strongly important	7
very important	9
Intermediate value judgment	2,4,6,8

Calculate the secondary index weight and performance evaluation

By formula, $CI = (\lambda_{max} - n)/(n - 1) = 0.02$

the calculation of the indicators, table look-up $CR=CI/RI=0.02<0.1$, the consistency of qualified, reasonable weight distribution. The calculation procedure is shown in the following table:

Table 8: Weight of evaluation index

First-grade indexes	Index weight	Second-grade indexes	Index weight	Excellent	Good	Mediate	Bad
Transformation input	0.091	Availability of funds	0.445	0.4	0.5	0.1	0
		Organizational maturity	0.265	0.9	0.1	0	0
		Allocation of resources	0.132	0.8	0.1	0.1	0
		Scheme and system	0.157	0.8	0.2	0	0
Transformation process	0.182	Demolition progress	0.106	0.8	0.2	0	0
		Project progress plan	0.130	0.5	0.4	0.1	0
		Engineering quality rate	0.271	0.6	0	0.4	0
		Transition fee payment	0.237	1	0	0	0
		Project supervision	0.128	1	0	0	0
		Distributive justice	0.128	1	0	0	0
Transformation result	0.384	Apartment layout design	0.571	0.7	0.3	0	0
		Housing quality	0.286	0.3	0.6	0.1	0
		Infrastructure	0.143	0	0	0.6	0.4
Transformation effect	0.364	Property right	0.142	0	0	0.18	0.82
		Property management	0.124	0.2	0.7	0.1	0
		Environmental improvement	0.285	0.2	0.8	0	0
		Daily-life convenience	0.285	0.6	0.4	0	0
		Public order situations	0.164	0.7	0.2	0.1	0
B				0.4011	0.208	0.206	0.189
Bmax				0.4011		Excellent	



Project performance evaluation

From the table, the author can obtain that, shed reform project transformation process as a whole is very good. In short, the shantytowns project performance evaluation is excellent, and it is a more successful urban shed reform project, which also reflects the city's good current situation of shantytowns transformation. To study the transformation of shantytowns through Analytic Hierarchy Process will contribute to promoting the local government to build a transformation of shanty housing security performance evaluation index system, which has a positive meaning for the improvement of the urban shantytowns.

Conclusion

Under the current background, the drawbacks of shantytowns are increasingly prominent; to explore the countermeasures for improving the renovation of shantytowns under the new situation is very necessary. The value of this paper lies in the analysis and suggest of the causes and countermeasures of the problems in transformation of the shantytowns, and ultimately achieve the purpose of improving the effectiveness of the implementation of shantytowns.

Reference

- [1]. Liu Jing. Study on the Model and Management of Shantytowns in Beijing [D]. China University of Geosciences (Beijing), 2015
- [2]. Zhou Jin. Study on the Application of PPP Model in the Shantytowns Project [D]. Chongqing University, 2015
- [3]. Gao Guangchun. Study on the Financing Mode of Shantou District Reconstruction - A Case Study Based on China's Liaoning Province [J]. Finance and Economics, 2014, 35 (2): 66-74.
- [4]. Moqvist L. The Competency Dimension of Leadership [J]. 2002.
- [5]. Ha S K. New shantytowns and the urban marginalized in Seoul Metropolitan Region [J]. Habitat International, 2004, 28(1):123-141.
- [6]. Grove J M. Cities: Managing Densely Settled Social-Ecological Systems [J]. 2009, 22(2):281-294.

