ISSN 2616-5902 Vol. 4, Issue 18: 34-38, DOI: 10.25236/AJBM.2022.041807

Research on the New Rural Waste Disposal Strategy under Fine Management -- Take Nanjing Jiangning District Environmental Sanitation Group as an Example

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Abstract: *The market environment is increasingly open, and the extensive management mode of the sanitation industry has a variety of typical problems for the cost management of the group. And the fine management, as a modern management concept, has become one of the effective ways of cost control. This paper takes the current situation of the group management as the research basis, takes the fine management theory as the research core, analyzes the current situation and data in the new rural waste treatment as the research focus, and finally proposes solutions.*

Keywords: *environmental health; new countryside; fine management; extensive*

1. Introduction

The development of the domestic environmental sanitation industry market started late, and the relevant enterprises mostly rely on the administrative guidance mode to develop, forming a extensive management mode, lacking refined management, especially the weak awareness of refined management of operating costs, leading to the high cost of garbage collection and transportation. In recent years, Nanjing Jiangning Environmental Sanitation Group, based on the super high environmental sanitation standard of a first-class city, has created a "refined environmental sanitation" to transform and upgrade the traditional extensive operation mode into a "human-machine" cooperation mode, and has created a new environmental sanitation that is fast, economical, meticulous and efficient. When mechanization, 5G assistance, and unmanned cleaning enter the sanitation operation, the sanitation is no longer the traditional working mode of "broom+rag", and the refined mode of "deep intelligent cleaning" is gradually taking on the new development direction of the sanitation group.

2. Fine management

Fine management, which first appeared in Japan in the 1950s. The concept was first applied to the manufacturing industry, which finally optimized the production process and the management process through refined management. Fine management is a very direct and effective management concept in the process of implementing cost control for enterprises. It can minimize the enterprise cost expenditure and improve the enterprise efficiency on the premise of ensuring the production quality and efficiency. Modern management believes that fine management is an idea and culture[1]. It is the inevitable requirement of refined social division of labor and service quality to modern management. Scientific management has three levels: the first level is standardization, the second level is refinement, and the third level is personalization.

In China, cost fine management is generally combined with comprehensive quality cost management, with full participation, process management and all-round management[2]. Is also the refinement of social division of labor, and the refinement of service quality of the inevitable requirement of modern management, is based on routine management and conventional management impression of the basic ideas and management mode, is a to minimize the management of resources and reduce management costs as the main goal of management mode (See Figure 1).

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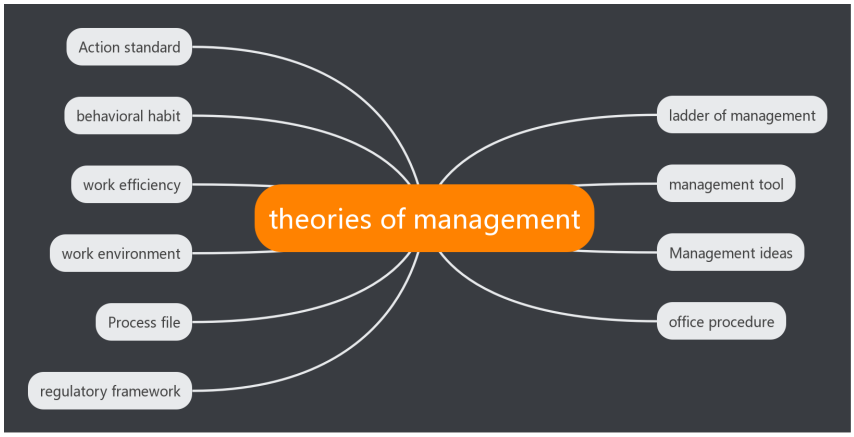

Figure 1: Fine management elements

Nanjing Jiangning Sanitation Group, under the guidance of implementing the spirit of urban environmental management proposed by the CPC Central Committee, Nanjing Jiangning Sanitation Group has introduced fine management into urban and rural environmental sanitation services, striving to improve the level of urban sanitation operations, do daily household garbage, making the rural cleaning mode tends to fine management, and has achieved good results. However, there is still an extensive management situation in the management of some links of the group, and a unified fine management system has not been established[3]. The cost management described in the main part of this article is planned to minimize the comprehensive control and operating costs of the group, and to achieve the goal of maximizing the value of the group. At the same time, according to relevant data, the amount of urban and rural household waste production has reached 0.8 kg / day, much higher than neighboring India, a populous country, and the rate of 9% has increased year by year. The household waste production in the group management area is 1.4 kg / day. The group's operation and work costs are large, so it is imperative to further promote the group's fine management.

3. Typical problems of fine management

3.1. Labor Cost Problems

Because the sanitation industry is a labor-intensive industry, it is very sensitive to labor costs. Normally, the combined labor costs account for 30% -40% of the total cost. In recent years, China's labor costs are constantly rising, resulting in the whole industry is facing the pressure of rising overall costs. At present, the environmental sanitation group has 645 registered employees, which has guaranteed the road cleaning and sanitation of more than 200 main and secondary roads (with a total area of about 11 million square meters) in Jiangning District. In the traditional extensive management mode, the labor cost accounts for 12.3% of the enterprise cost, and the labor cost invested is huge and needs to be solved urgently[4].

3.2. Fuel costs problem

In recent years, international oil prices are on the rise (standard barrel crude oil rose from more than $40 in 2015 to more than $60 in 2018), and due to the industry span reasons, it is difficult for sanitation enterprises to adopt financial instruments and other forms to reduce the burden brought by rising oil prices. Due to the rising oil price, the rising cost pressure of the environmental sanitation Group is relatively obvious. At present, the group's daily fuel cost is 38,000 yuan / day, accounting for 27.6% of the group's operating cost. How to manage the fine work, make overall arrangements and scientific allocation of transportation tasks is an important research issue.

3.3. Cost monitoring system problems

A complete cost management chain should be to "cost budget-cost plan-the control-cost accounting-afterwards analysis and feedback" and several links, the group current management mode is given priority to with budget and control, ignore analysis and feedback, lead to poor cost management effect, cannot effectively for the weaknesses of the enterprise cost management to improve. At the same time,

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there is a lack of cost forecast, income analysis and financial monitoring between capital input and output, and there are signs of imbalance between capital input and income. Forget some inconspicuous and extremely necessary expenses, such as the employee incentive mechanism is not perfect, some sanitation workers work slack and "three no package, five regardless" of "passers-by a" prominent problem; low mechanization input, and cause high labor cost (but low labor efficiency), are fine management, but extremely important issues[5].

4. Fine management and application strategy

4.1. Mechanized operation replaces human labor

Recently, in order to further do a good job in meeting the civilized city, beautiful countryside review related work, the group has increased the frequency of mechanical cleaning in the large flow of rural blocks and busy sections, by strengthening the mechanical circuit cleaning efforts, reduced the labor intensity and the labor cost of the front-line workers. In the streets and congestion road added small cleaning vehicles and cleaning personnel, more flexible for specific environment sections, reasonable to avoid the high temperature and congestion period, explaining the fine operation, give full play to the "mechanical + artificial" operation advantage, and the daily "two day sweep, pick up" operation mode to "all-weather cleaning cleaning" mode, improve the efficiency of vehicle cleaning, ensure the quality of the road cleaning within the area under its jurisdiction. Old vehicles with high maintenance and operation costs are eliminated in time. By June 2019,20 sanitation operation vehicles have been replaced and added, which has reduced the operating costs of fuel oil and maintenance to a large extent[6]. On this basis, the group of sanitation vehicle daily refinement management specific measures have three aspects: first, establish sanitation vehicle parameter management system, every car, intelligent sanitation vehicle operation fuel consumption management system will automatically record each car mileage, driving date, maintenance costs, maintenance subjects, etc., when the vehicle should be maintained, the system will be early warning, remind managers reasonable arrangement vehicle allocation, for each operation vehicle cost fine statistics, improve the efficiency of vehicle use, so as to better work. Second, record the mechanical state of the vehicle, evaluate the operation effect, reduce the fuel consumption and reduce the operation cost; the management system should not only monitor the vehicle position through the GPS positioning system and the vehicle camera, but also connect with the sanitation big data platform management system, monitor the operation vehicle more accurately, completely eliminate the monitoring blind spots in the vehicle operation process, and better conduct the fuel consumption management of the sanitation vehicle. Third, sanitation vehicles in the process of operation, due to some driver operation mistakes, will face a lot of problems. Formulate the corresponding management system, improve the operation status of the vehicle and the responsibility system for the driver, so as to comprehensively improve the operation status and effect of the sanitation vehicles, the implementation of the whole process, can effectively develop the sanitation operation, to provide a strong guarantee for the urban sanitation.

4.2. Integration of emerging technology products

The Outline of China's 14th Five-Year Plan proposes to "promote the construction of new smart cities at different levels and by categories" and "build smart cities and digital villages". Since 2009, China's construction and development of smart cities have officially kicked off. Smart city has a wide range of service objects and service contents, but the core line is to "use information and communication technology" to improve the city service quality. Smart sanitation is an important part of smart city. During the 14th Five-Year Plan period, the country's promotion of the construction of smart city will benefit the development of smart sanitation industry.

Intelligent waste classification and recycling equipment. It is an intelligent garbage classification and recycling equipment based on the Internet IOT technology and a free combination of multiple auxiliary boxes with the main box as the main body[7]. Supporting mobile phone small program, facial recognition, reliable integral system, make the rural residents 'garbage classification and recycling behavior to achieve the compensation of cash feedback, greatly improve the residents' awareness and enthusiasm of garbage classification. At present, garbage classification equipment has been gradually put into some communities and colleges in Jiangning District for pilot. At present, the use of this garbage classification equipment not only reduces the work intensity of the front-line sanitation workers, but also saves the cost of human input, and provides a new development way for the fine management of the group[8].

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Jiangning district relying on the Internet of things, cloud computing, big data technology such as living garbage classification refinement, information management platform, integration of urban and rural living garbage classification, eat hutch garbage, large garbage, decorate garbage classification, collection, transportation, transit, disposal of each link, realize the whole process classification wisdom regulation. Through this platform, conduct sanitation mechanization operation and manual cleaning, conduct the whole process management of people, vehicles, objects and things; summarize and analyze the relevant data, evaluate the quality of sanitation operation and garbage classification implementation effect through digital means, build a complete sanitation management and garbage classification effectiveness supervision and service platform, effectively improve the degree of waste reduction, harmless and recycling（See Figure 2）.

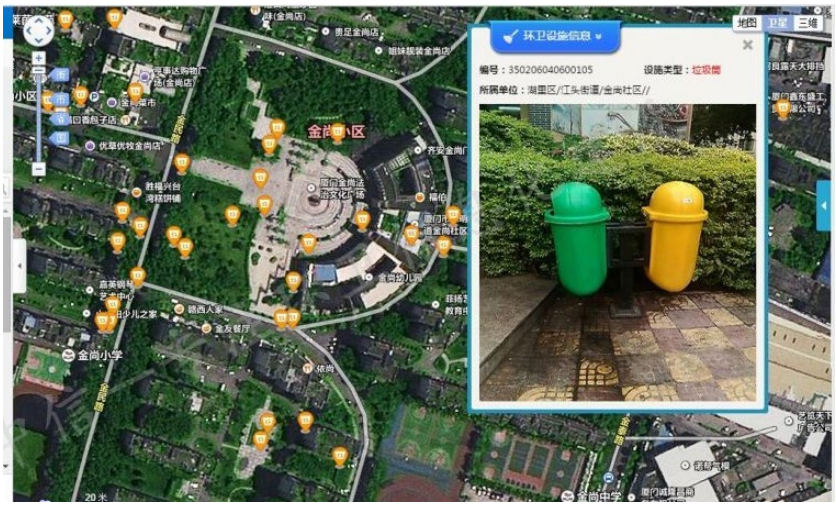

Figure 2: Display diagram of intelligent garbage equipment

4.3. Formulate a fine management system

Township environmental sanitation management involves road cleaning, public toilet management, garbage collection, sanitation workers management and kitchen waste swill waste disposal, etc. In the realization of fine sanitation management standards, should be clear classification, phased management objectives, management refinement, management system, management assessment. At the same time, the management of each step and content of the fine management should understand that its management core is the control and assessment of each link of the environmental sanitation work process[9]. Therefore, the Group can learn from the working mode of "grid worker", mobilize the enthusiasm of sanitation workers (reward and punishment mode), delimit the scope of responsibility of each person, guide front-line workers as "sanitation grid worker" to implement quantitative evaluation and hierarchical evaluation; then the subordinate companies and departments, check no less than twice a week, make inspection records, propose rectification period for problems, and reward sanitation workers with high sanitation cleanliness (evaluation standards and contents of the index table are being drafted and revised). Over time, the accumulation of details plays a positive role in improving the fine level of urban sanitation management.

5. Conclusion

The extensive management mode is caused by the historical development background. In the face of the gradually open market environment, the disadvantages of the extensive cost management are becoming increasingly prominent, and the advantages of the fine management mode are also accepted by the market development, which is also the trend of social renewal. The implementation of fine management of rural environmental sanitation is in line with the requirements of General Secretary Xi Jinping to innovate urban and rural management methods and strengthen the fine management of towns and townships. Through the application of in-depth analysis of the group operation data cost, scientific energy saving, employee incentive, formulation of assessment standards and elimination of waste production vehicles, it is of positive significance for the innovation of sanitation management technology, for the improvement of fine management system, and finally to improve the environmental health of beautiful countryside.

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