"Internet + Standardization" University Waste Classification Market-oriented Operation Alliance Investigation and Research

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Abstract. With the advent of the Internet era and the improvement of people's living standards, more and more garbage is generated per capita. If backward countries can realize garbage recycling, they can turn waste into treasure, which can not only reduce environmental pollution but also avoid resources of waste. The "Internet + Standardization" university garbage classification market-oriented operation alliance came into being. It uses the "Internet" as a technical means, based on standardized garbage classification, and uses a new market mechanism in various colleges and universities to encourage college students to take the initiative to classify garbage and improve college students. Environmental awareness. During the implementation process, we will establish an integrated platform that benefits schools, students, merchants and recycling enterprises, form a market-oriented mechanism of multi-subject linkage of resource recycling and reuse, improve the environmental protection awareness of college students, and explore a road for garbage classification suitable for implementation in China.

Keywords: Garbage classification, resource recycling, university pilot, Internet, big data analysis.

1. Introduction

In the current Chinese market, a complete waste recycling industry chain has not been established, the national waste recycling awareness is relatively weak, and the establishment of the waste recycling market system is not perfect. At present, most of the garbage classification being tried out is dominated by the government, with large investment and small income, and the masses are not motivated to throw garbage. In response to such a market situation, we have conducted market research on foreign markets and some domestic waste classification pilots, and found that the main reason for the difficulty in improving the waste classification system is that the people's awareness of environmental protection is weak, and they cannot consciously classify waste. Due to the disadvantages of high cost and long payback period, many enterprises are reluctant to invest in garbage recycling projects [1].

After conducting research on the current market situation and analyzing and studying national policies, we decided to start with colleges and universities and established the "Internet + Standardization" college garbage classification market-oriented operation alliance to test the effect of garbage recycling projects in colleges and universities. In order to achieve the effective use of resources [2], China put forward the concept of garbage classification as early as 1996, and in recent years, it has also introduced corresponding policies to encourage garbage classification for the whole people. The Notice on Comprehensively Carrying out Domestic Waste Classification in Cities" and "The Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste (Revised Draft)" have been issued successively, which put forward requirements for the classification of waste in various cities, and carried out incentive measures such as funding and government support to encourage Various businesses develop garbage collection programs.

Therefore, in order to respond to the social call and improve the environmental protection awareness of college students, our team established this project, taking universities as a pilot project, aiming to form an integrated platform for schools, students, merchants and recycling companies, and

to mobilize the initiative of all parties in waste classification through market mechanisms. Sexuality and enthusiasm, and provide reference for the classification and disposal of social domestic waste [3].

2. Project operation

2.1. Project investigation interview analysis

We interviewed the pilot community of garbage classification in Yantai Port. According to the description of the person in charge of the place, we learned that although there are differences in the garbage classification models in many places in Yantai, most of them have been implemented. The Yantai port area started to implement the classification policy last year, and the full coverage of the area has been completed in 2022.

Next, we also asked about the regional model in detail. The head of the area gave us a warm answer. This area adopts the method of self-sorting by residents and sorting and recycling of trash cans. In the early stage of the implementation of sorting, an encouragement system - a sorting and integral system is adopted. According to the amount of garbage thrown by residents, the points are exchanged, and the points can be exchanged for daily necessities when the points reach a certain amount. For the problem of easy error and unclear classification of garbage, the area has set up special guides to guide, and distributed brochures with pictures and texts to residents. These series of methods are aimed at enhancing the enthusiasm of the whole people for garbage classification. With the participation, we can better carry out garbage classification and beautify the community environment. In addition to Yantai, Shanghai, as a pioneer city [4] in garbage classification, has adopted a mandatory classification model, which has written garbage classification into the law, and imposed corresponding penalties on those who do not classify garbage according to regulations. Under the promotion of garbage classification, the emerging profession of "collecting garbage on behalf of the Internet and contracting workers" has emerged. Customers make an appointment online and go to their door to collect garbage, so as to complete garbage classification. In addition, Tai'an adopts the "2+2" garbage classification model, that is, the combination of mandatory classification and guided classification, and the combination of professional classification and social linkage.

The above, whether it is mandatory or encouraged, has promoted the process of garbage classification across the country, and has a strong reference significance for areas that have not yet been implemented and have not been perfected.

2.2. Project operation process

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In the early stage of the project, firstly, establish contact with the school, establish a cooperative relationship with the school's arrival floor, then purchase the corresponding equipment, put trash cans in various buildings of the school, and do a good job in statistics.

After the initial establishment of the garbage classification market mechanism, the bidding enterprises will complete the market-oriented operation [6] of garbage classification. In terms of publicity, the public account will continuously push garbage classification articles and video clips to popularize classification knowledge and related requirements; you can also use school leaders to preach at conferences, theme class meetings, theme party day activities, volunteers entering classes into dormitories and other activities in The whole school is mobilized; activities such as garbage classification knowledge tours and knowledge contests can also be carried out in the later garbage classification process to continuously improve teachers and students' environmental awareness and environmental responsibility.

Set up different garbage classification and delivery, collection facilities and equipment according to different scene functions. According to the "four points" requirements, classified delivery and classified collection are matters that need to be completed within the university, while classified transportation and classified processing require the assistance of relevant professional units. Different garbage, different clearing and transport units, management is difficult. Therefore, by introducing social capital, all can be disposed of to a waste recycling enterprise. The company can take away the garbage collected on campus at three fixed points at noon, afternoon and evening, and send them to different garbage disposal centers for garbage disposal.

In the living area, there are many types and quantities of garbage. The two buildings share a set of intelligent equipment, and a total of 5 sets of intelligent equipment are purchased, and each intelligent equipment is equipped with 4 types of trash cans; in the dining area, one set of intelligent equipment is purchased on each floor. 4 sets of smart devices, each with 3 types of trash cans (kitchen waste, recyclable, others); in the teaching area and main roads, a total of 3 sets of smart devices were purchased, and each set of smart devices was provided with 2 types of trash cans (recyclable) ,other). Adopt a "3+1" profit model, including the spread of garbage buying and selling, merchant rebates or cash withdrawal deductions, school or government subsidies, and other corporate advertising. At the same time school or government subsidies. Garbage classification has great social benefits, and after the market mechanism is put into practice, it can greatly save the cost of cleaning personnel and garbage disposal. Therefore, the school or the government can use a portion of the cost savings to subsidize the operation of the company.

In the fact and operation of the waste sorting project, advertisements of other businesses can be printed in the trash can to obtain investment, ensure maximum income, and make full use of resources.

After the garbage classification market system is implemented and observed in each pilot, the obtained data will be analyzed and the implementation plan will be improved. When the preliminary plan is carried out, the plan can be implemented to major universities for promotion and expansion of business scope.

3. Preliminary Operational Results of the Project

In the early stage of the project, this paper mainly adopted the method of questionnaires to investigate, to understand the daily habits of college students and the amount of recyclable garbage generated.

3.1. Questionnaire age group

In the process of this questionnaire survey, in order to avoid the gap in living habits caused by the age gap, we interviewed 168 college students of different grades for the survey. The following is a chart of the proportion of surveyed age groups

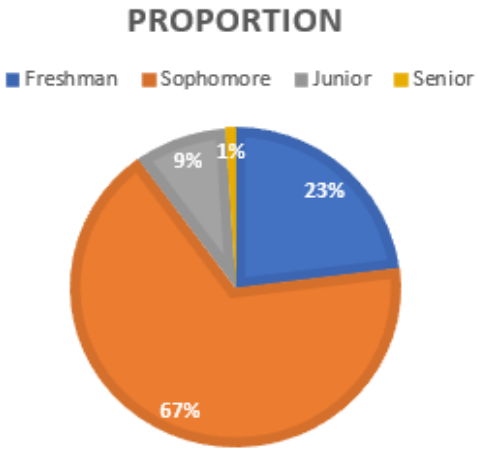


Fig 1. Age scale diagram

Considering that freshman students are still not familiar with university life, and most senior students are doing internships abroad, so the reference value is small. Therefore, we mainly conducted a questionnaire survey on sophomore and junior students. Through the legend, it is found that the sophomore students have a higher proportion of participating in the questionnaire and pay more attention to garbage sorting. Through clubs and student unions, freshmen can be driven to participate in garbage sorting. The relationship is relatively close and has a certain influence. It can become the key development object of garbage classification in colleges and universities, and lead the whole school to participate in garbage classification and recycling.

3.2. Daily online shopping frequency

In order to investigate the domestic waste caused by online shopping, we conducted a survey on the daily online shopping frequency of college students. The survey data is shown in the Fig 2.

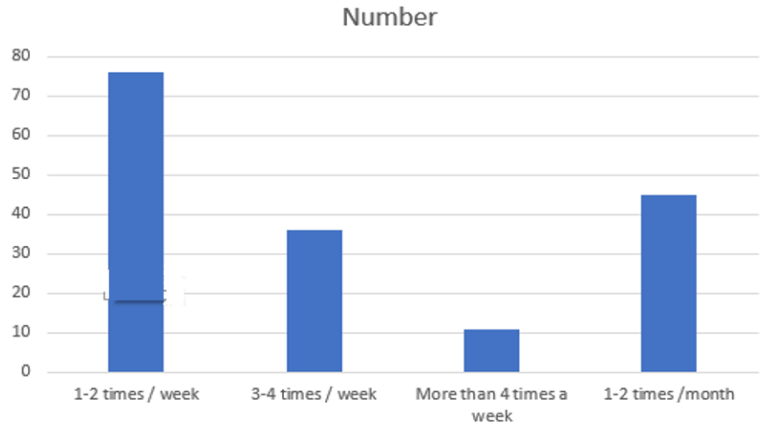


Fig 2. Frequency map of daily online shopping

According to the survey, most of the students' daily shopping frequency is 1-2/week and 3-4 times per week. They have strong spending power. During the online shopping period, a large amount of auxiliary garbage such as express packaging boxes will inevitably be generated. The amount of recyclable garbage Huge, through standardized garbage classification, recycling and reuse of recovered waste, turning waste into treasure, not only can reduce pollution, but also reduce the consumption of raw materials.

3.3. Handling of express packaging

This project mainly uses recyclable garbage as the profit source, and express packaging is the main type of recyclable garbage. We have investigated the treatment of express packaging by college students

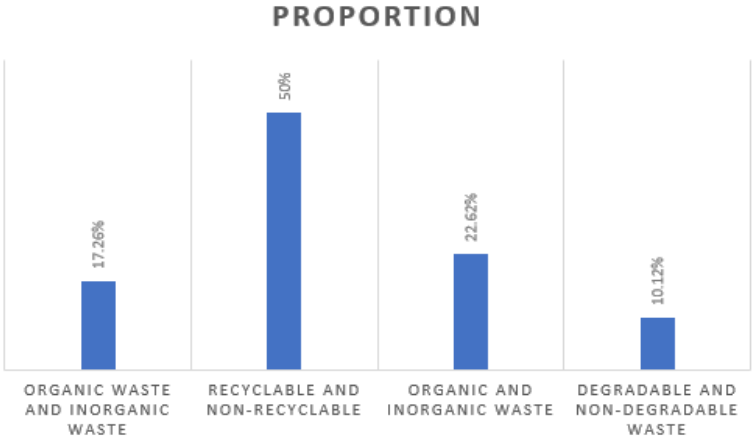


Fig 3. Handling of express packaging

According to the survey, 54.77% of the students have used and recycled the express packaging, and they have a certain awareness of recycling, while 45.24% of the students deal with the express packaging by throwing it away directly. Part of the recyclable resources are wasted, so it is urgent to establish an effective garbage classification method.

3.4. Willingness of garbage classification

If the garbage classification and recycling in colleges and universities is to be carried out smoothly, students' willingness is indispensable. The following is the data of the investigation of garbage classification willingness of some students conducted by our team

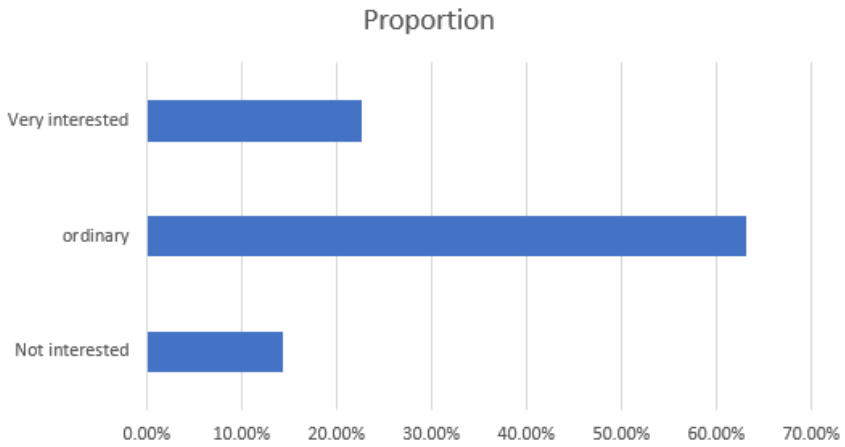


Fig 4. A survey of students' willingness to sort garbage

As can be seen from the Fig 4, students who are very interested in garbage classification account for 22.62%, and these students can become strong leaders of garbage classification in colleges and universities. Those who have no strong feelings about garbage classification account for 63.10%. We need to strive for such students, and they can become the indispensable backbone of garbage classification. Students who are not interested in garbage classification account for 14.29%, which is also a force that cannot be ignored. For this kind of students, garbage classification knowledge competition, credit incentive and prize exchange can be carried out to attract their interest, and strive to make garbage classification a new trend involving all people.

3.5. Garbage classification method

In order to enable college students to better classify and recycle garbage, we investigated the types of garbage classification that college students like in the early stage. The survey data is shown in the Table 1.

Table 1. The ratio of preferences for different garbage classification methods

Express packaging processing	Number	proportion
Just throw it away	76	45.24%
waste utilization	22	13.10%
Collect for waste recycling	70	41.67%
other	0	0%

Through the investigation, we can see that recycling garbage and not recycled garbage classification students proportion is as high as 50%, organic waste and the inorganic waste, organic waste proportion quite, biodegradable waste and non-biodegradable rubbish classification only 10.12%, most students tend to the garbage can be divided into recyclable garbage and recycle garbage, Therefore, in the later work, we will also adopt the classification method of recyclable garbage and non-recyclable garbage.

3.6. The types of daily life garbage of college students

In order to carry out the garbage disposal work in the later stage, it is necessary to know the main types of garbage generated by college students in their daily life. For this reason, we conducted an investigation and research on the types of garbage generated by college students, and the results are as follows:

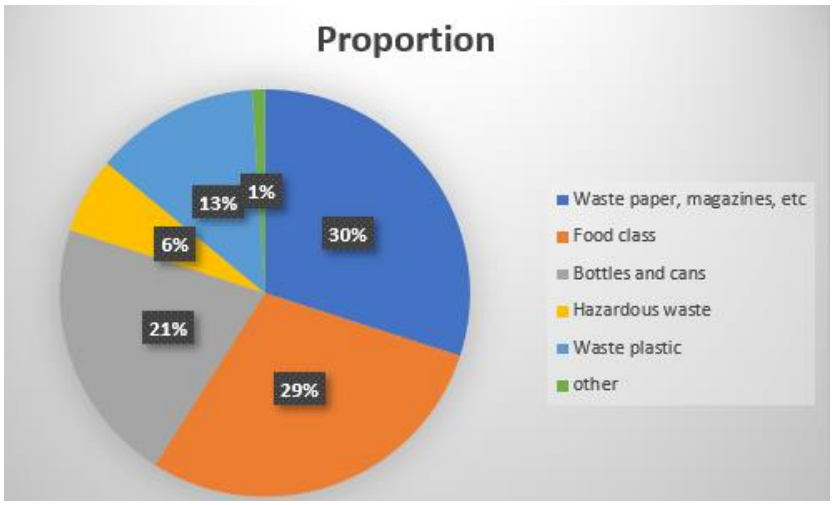


Fig 5. Diagram of the main types of garbage generated

It can be seen from the Fig 5 that the main types of garbage produced by college students are discarded paper, food, bottles and cans, which can be the focus of garbage recycling in the later stage.

3.7. Incentive system for waste sorting in colleges

Implementing garbage classification, the incentive system may be a booster, attracting more people to participate in garbage classification. What is the "thing" in exchange for points? Based on the students' willingness to conduct a questionnaire survey, the data are as follows:

Integral exchange			
On-campus supermarket for merchandise	Points for money	Points won the school honor	other
38	61	68	1
22.62%	36.31%	40.48%	0.60%

Fig 6. What "thing" to exchange for points

It can be seen from the legend that most students prefer to exchange points for money and honors. Therefore, the formulation of the garbage classification incentive system can set up a variety of exchange methods to meet the diverse needs of students and promote the smoother garbage classification in colleges and universities. For the exchange of goods in the on-campus supermarket, we have set up two methods of designated goods and vouchers. More than 54% of students prefer to choose designated goods; for points to exchange money, we set up to directly enter the campus card and enter WeChat or Alipay, 78.9% of the students prefer to choose the designated goods. Students are more willing to enter WeChat or Alipay, so they can directly set to enter WeChat or Alipay to meet the wishes of most students.

4. Innovation and advantages of the project

4.1. Build a multi-subject linkage market mechanism for garbage classification

In order to realize the recycling of resources, there is also a market mechanism of no scale. However, the current trial garbage classification is mostly government-led, with large investment and small income, and poor initiative of the masses to throw garbage. Therefore, our team believes that after the trial of garbage classification, a multi-subject market mechanism should be formed, including consumers, waste recycling enterprises and organizers.

The unique conditions of teachers and students in colleges and universities, such as strong awareness of environmental protection, huge amount of domestic waste, high recycling rate, and regular work and rest, have become the inherent advantages of promoting the reform of waste classification. Therefore, we innovatively take colleges and universities as pilots, use the Internet as a technical means, and use the standardized garbage classification as the basis to explore an integrated operation platform that benefits schools, students, businesses and recycling enterprises, and form a market-oriented mechanism for resource recycling and reuse, fully mobilize the initiative and enthusiasm of all parties in garbage classification [6].

4.2. Realize the unification of economic and social benefits of garbage classification

Economic benefits are the premise to ensure the operation of the market-oriented mechanism for waste classification. The social benefit is the continuous driving force to promote garbage classification [7]. This project is specifically aimed at recycling garbage in colleges and universities. After correctly classifying garbage, it will be centrally disposed of and reused. It has the following social benefits:

1) Garbage classification can reduce campus garbage and promote green development;

2) The recycling and reuse of garbage can promote resource recycling and accelerate the development of circular economy;

3) Garbage sorting and collection can optimize the campus environment and promote the construction of a beautiful campus;

4) A clean and beautiful campus environment can maintain the safety and stability of the campus;

5) At the end of the semester, students can exchange the accumulated points for medals or prizes, and can also be combined with student behavior assessment, civilized dormitory, and civilized campus construction. This mechanism can also improve the awareness of garbage sorting and recycling of all teachers and students in colleges and universities [8], cultivate the habit of garbage sorting, and better realize the management and training of students.

4.3. Combining the standardization of garbage classification with the Internet and smart devices, the operation is simple and easy to promote

With the continuous maturity of technology, this project uses intelligent equipment that automatically weighs and accumulates points, and uses the Internet to enter personal information based on standardized garbage classification, using the integral incentive system for garbage classification, the students have a high degree of acceptance, the entry and process are simple, and the operability is strong [9].

4.4. Forming a complete chain of interests to drive the development of related industries

Garbage sorting requires multi-party cooperation and multi-industry participation. Once implemented, college garbage sorting will become a huge industrial chain, which can drive the collection of garbage collection networks, the development of garbage sorting apps, and the development of small programs, smart trash cans, garbage recycling, and garbage disposal. The development of other industries will promote the transformation [10] and upgrading of the traditional waste recycling industry, drive the development of related industries, provide some jobs, and solve some employment problems.

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