

Market Prospects, Profitability, and Risk Prevention of Self-service Sales Models

-- Taking Self-service Vending Machines for Hygiene Products as an Example

Qing Gu^{1, a}, Siyu Gu², Zuye Deng³, Jin Chen^{4, *}

¹ School of Economics, Anhui University of Finance and Economics, Bengbu, Anhui, 233030, China

² School of Business Administration, Anhui University of Finance and Economics, Bengbu, Anhui, 233030, China

³ School of Finance, Anhui University of Finance and Economics, Bengbu, Anhui, 233030, China

⁴ School of Accountancy, Anhui University of Finance and Economics, Bengbu, Anhui, China

^a2994966689@qq.com, ^{*}1730607338@qq.com

Abstract

Self service vending machines for hygiene products play a very practical role in real life. In public places, self-service vending machines for hygiene products can achieve fast and convenient transactions, thereby meeting the needs of consumers. This article first analyzes the basic situation, core competitiveness, and innovation points of the products and services provided by the project; Then, analyze the market environment, market potential, competitors, target customers, and market prospects of the project, and analyze sales channels, price strategies, and promotion strategies; Once again, analyze the financial condition and profitability of the project; Finally, the main risks and prevention strategies faced by the project were analyzed.

Keywords

Self-service Sales; Market Prospects; Profitability; Risk Prevention.

1. Introduction

In today's fast-paced society, whether it's fast food or fast cars, it reflects people's pursuit of speed. People pay more attention to their inner qualities while pursuing speed, and pursue a high-quality life. Therefore, traditional retail models are gradually unable to meet everyone's needs. With the gradual rise of online sales and door-to-door delivery models, the self-service vending model of self-service vending machines also needs to take a share of the retail industry. I believe everyone is familiar with self-service vending machines. More and more self-service vending machines are appearing in public places such as hospitals, schools, and shopping malls. Their convenient, fast, and affordable features have attracted many people. Based on the total sales of offline fast-moving consumer goods from vending machines, the share of vending machines in the traditional offline fast-moving consumer goods market is expected to increase from 1.2% to 2.0%.

The self-service vending machine market for hygiene products in our country is developing rapidly, with a constantly expanding consumer group and a changing consumption structure. With the changing consumer attitudes, the demand for hygiene products is also constantly increasing. For the domestic hygiene product self-service vending machine market, market

competition is not fierce, and the main competitors are the existing large and small domestic vending machine enterprises in China.

Self service vending machines for hygiene products play a very practical role in real life. In public places, self-service vending machines for hygiene products can achieve fast and convenient transactions, thereby meeting the needs of consumers. Self service vending machines for hygiene products, as a relatively emerging product in China, are currently in the early stage of development compared to countries such as the United States and Japan. With the development of today's society, people have high requirements for the quality and convenience of sanitary products. Therefore, vending machines for hygiene products have enormous market potential in China.

2. Products and Services

2.1. Product Overview Introduction

Our brand name is "Smiling Xiaowei" -- a hygiene self-service vending machine that can be purchased anytime, accurately positioned, and make you smile. It mainly provides convenience for people who encounter physiological emergencies outside, bringing them a comfortable and convenient experience both physically and mentally. The target customers are mainly those who experience physiological difficulties, such as women in their menstrual period, mothers and infants, patients with physiological difficulties, and other daily physiological needs. The "Smiling Guard" is placed in public toilets in various tourist attractions, schools, shopping malls, etc. It will also be appropriately placed in other locations such as high-speed trains, office buildings, and bathrooms.

The types of products included in "Smiling Guard". The sanitary napkins required for women during menstruation include various specifications such as daily sanitary napkins, night sanitary napkins, safety pants, etc; Hygiene products required by mothers and infants (baby diapers, baby measuring sanitary pads, etc.); Adult diapers (for elderly people and patients who cannot take care of themselves physiologically), tissue and wet wipes products, the price and specifications of the sold goods. On the "Smiling Xiaowei" self-service vending machine and mini program, specific prices, materials, and specifications of the products sold will be displayed, such as the material, mesh, cotton surface, and length of sanitary napkins. Assess factors such as the location of the vending machine, the surrounding population, nearby convenience stores, and the convenience of purchasing, and then price the products sold by the unmanned vending machine based on the actual situation of the location.

We use a combination of mini programs and vending machines to serve users, and enable location function for vending machines. Through navigation, people in need can find the nearest vending machine. The mini program will classify sanitary products, and price, material information, and function information will appear under each product category. WeChat code scanning payment or Alipay code scanning payment. On the "Smiling Guard" and mini programs, there will be a simple operation process for easy operation by buyers. For some special occasions and crowds, we also have detailed and careful preparations. In special places such as middle and high schools where mobile phones are not available, we will provide the function of swiping meal cards and cooperate with the school. For some people who have difficulty reading or operating smart machines, we will install a button on the "Smiling Guard". When this button is pressed, there will be a voice operation process (pressing it again can pause). Just follow the voice operation to smoothly purchase hygiene products. The repair contact information is printed on the vending machine, and when there is a problem, consumers can call for free to solve the problem in a timely manner.

2.2. Core Competitiveness

The current related vending machines are mainly distributed in bathrooms, teaching buildings, or office buildings. Its distribution area is not only limited but also scattered, not concentrated enough, and the popularity rate is very low. And our "Smiling guards" are placed in public toilets at various tourist attractions, schools, shopping malls, etc., and vending machines are also appropriately placed in other locations. Bathrooms and dormitory corridors at high-speed rail stations will be widely installed. Our brand is widely and accurately set in specific occasions to meet the needs of relevant audiences. "Smiling Little Guard" sells a wide range of products, including sanitary napkins for women during menstruation, hygiene products for mothers and infants (such as baby diapers and mommy measuring sanitary napkins), adult diapers (for elderly and patients who cannot take care of themselves), tissues, and wet wipes, which can meet the different needs of different consumers.

Our brand purchases from the source and combines online and offline sources. The source of sanitary supplies comes from brand manufacturers. We will establish a win-win cooperation relationship with relevant brands, directly introducing and purchasing hygiene products from manufacturers, thereby reducing the involvement of intermediaries, reducing costs and ensuring supply of goods. Our brand sells products from multiple brands, using direct sourcing and implementing relevant plans and measures for operation. Develop an inventory management plan, including types, quantities, and regular inventory checks, to ensure that inventory levels are within a reasonable range. By analyzing sales data, predicting customer demand, taking timely restocking, reducing inventory and other measures to avoid situations of excessive or insufficient inventory. Optimize supply chain management by collaborating with suppliers, strengthening coordination, and improving the efficiency and accuracy of the supply chain to reduce situations of excessive or insufficient inventory. Always familiar with customer needs. Regularly conduct surveys, visit and observe customers, and update the products sold based on their needs.

2.3. Product Innovation Points

Our "Smiling Xiaowei" brand collaborates with multiple parties to sell sanitary napkins that women need during their menstrual period; Hygiene products required by mothers and infants (baby diapers, baby measuring sanitary pads, etc.); Adult diapers (for elderly people and patients who cannot take care of themselves physiologically); Products such as tissues and wet wipes. Moreover, some of the products sold are complementary to each other, such as when a sudden situation occurs, consumers may not only purchase sanitary napkins, but also paper towels, etc.

At present, the products sold in the relevant self-service vending machines on the market mainly serve female consumers during their menstrual period, with a small customer base and difficulty in achieving large-scale popularity. Our brand has a wider range of services, including women during their menstrual period, those who have just given birth or given birth, infants and young children, patients in need, and the elderly. Some often overlooked small groups also belong to our customers. The developed mini program will classify sanitary products, and each product category will have relevant price, material, and function information. "Smiling Xiaowei" will activate the positioning function. Through the mini program interface, you can search for nearby self-service vending machines for hygiene products and provide navigation services, which can help people in need find nearby vending machines. On the "Smiling Guard" and mini programs, there will be a simple operation process for easy operation by buyers.

3. Market Analysis

3.1. Market Environment

The self-service vending machine market for hygiene products in our country is developing rapidly, with a constantly expanding consumer group and a changing consumption structure. According to data from China Economic Net, in 2018, the market size of China's hygiene products industry reached 93.14 billion yuan, an increase of 14.8% compared to 2017. With the changing consumer attitudes, the demand for hygiene products is also constantly increasing. For the domestic hygiene product self-service vending machine market, market competition is not fierce, and the main competitors are the existing large and small domestic vending machine enterprises in China.

3.2. Market Potential

Self service vending machines for hygiene products play a very practical role in real life. In public places, self-service vending machines for hygiene products can achieve fast and convenient transactions, thereby meeting the needs of consumers. Self service vending machines for hygiene products, as a relatively emerging product in China, are currently in the early stage of development compared to countries such as the United States and Japan. With the development of today's society, people have high requirements for the quality and convenience of sanitary products. Therefore, vending machines for hygiene products have enormous market potential in China.

3.3. Competitors

The main competitors of the product include: the sanitary napkin service system of Shenzhen Jiali Sanitary Products Co., Ltd., the smart core sanitary napkin service system of Beijing Smart Core Sanitary Products Co., Ltd., and the core sanitary napkin service system of American Smart Core Sanitary Products Co., Ltd. The competition in the self-service vending machine market for sanitary napkins is relatively small, with major domestic and foreign large and small enterprises as competitors, among which domestic large and small enterprises have strong competitiveness. Large domestic enterprises have strong market influence, high market share, resource advantages, technological advantages, and strong competitiveness. However, small enterprises have limited funds, insufficient technology, lack market influence, and weak competitiveness. Through competitive analysis in terms of price, quality, service, and technical support, it can be found that Renrui Trading Co., Ltd.'s "Fangfang" brand sanitary napkin emergency self-service machine has greater advantages in terms of price, quality, and service, while Alice Technology's "OmiTech" brand sanitary napkin emergency self-service machine in the UK has greater advantages in technical performance, energy conservation, and environmental protection.

3.4. Target Market and Customers

In the collected questionnaires, hygiene products can mainly be set up near public toilets, tourist attractions, shopping malls with high pedestrian traffic, public squares and other places, and can also be set up in remote suburbs and other places to facilitate customer use. And for different places, we can also make certain changes to the self-service vending machines for hygiene products to adapt to the needs of different places. For example, standard self-service vending machines in business venues, most people mentioned in the collected questionnaires that they can also sell items such as alcohol wipes and disposable eyewear. The customer group in commercial places is mainly young people, and their requirements for hygiene self-service machines are mainly low price and reliable quality. For special places such as middle and high schools where mobile phones are not available, we will provide the function of swiping meal cards and cooperate with the school. The placement of self-service vending machines for

hygiene products can be near public toilets in various tourist attractions, schools, shopping malls, and other places.

According to a survey report, more than half of the respondents choose to purchase vending machine hygiene products near public toilets and tourist attractions, followed by public places with high foot traffic, and fewer choose suburban areas. So, the vicinity of public toilets and tourist attractions will be designated as key placement locations, with a higher placement density. Reasonable services and goods will be arranged based on on-site investigations of pedestrian flow and main consumer needs. In addition, office buildings and shopping malls generally have high foot traffic and are relatively fixed. The most important thing for office workers and shopping malls is convenience, and automatic vending machines are open 24 hours a day, which is very suitable for the real-time consumption needs of consumers. Campus, due to its stable flow of people, high demand, and high student quality, is easy to accept new things, and has become a high-quality location resource in the hearts of automatic vending machine operators. Our team has the advantage of being a college student team, and putting vending machines on university campuses for trial implementation is a high-quality choice.

We have found through research that we can design sales amounts, operating procedures, product information, and other content on vending machines to display their information. We can also promote positive and heartwarming phrases and various slogans to alleviate anxiety, enhance people's happiness and satisfaction. In the development stage, we will also develop a mini program that will enable positioning function for vending machines. Users can find the nearest "Smiling Guard" vending machine through the navigation in the mini program. The mini program will also classify sanitary products, and price, material information, source, and function information will appear under each product category, "Xiaowei Smile" supports more payment methods (such as WeChat, Alipay, etc.), which can improve the user's purchase experience, and will open campus card payment in places such as campuses where online payment is not available, which will greatly facilitate students' health needs. This self-service vending machine not only brings great convenience to consumers with urgent physiological needs, but also allows operators to collaborate with different brands to put more hygiene products with higher profits into smart vending machines.

In addition, there is still a lot of room for imagination in the development of vending machines in the later stage. They can combine the needs of consumers and sell high-frequency necessities, while providing diversified services, such as selling disinfectant alcohol, eyeglass cloth, etc.

3.5. Market Prospects of the Product

Absorbent hygiene products include sanitary napkins, diapers, paper urinary incontinence products, and other products. In recent years, the variety and popularity of absorbent hygiene products in the industry have been continuously enriched, and the industry has been developing steadily. With the increase of per capita disposable income of residents and the continuous enhancement of personal health awareness, absorbent hygiene products have met consumers' pursuit of safety, comfort, and health. The demand has gradually expanded, and the market size has grown significantly. Data shows that the market size of absorbent hygiene products in China reached 121.4 billion yuan in 2020, a year-on-year increase of 4.2%.

4. Marketing Strategy

4.1. Product Features

The "Smiling Little Guard" hygiene self-service vending machine is a product that provides various daily hygiene necessities. It provides sales of hygiene products for people with urgent physiological needs, including sanitary napkins for women's menstrual periods, sanitary products for mothers and infants (baby diapers, pregnant women's diapers, sanitary napkins,

etc.), adult diapers (for elderly or patients who cannot take care of themselves), tissue products, disinfectants, masks, etc. This self-service vending machine for hygiene products, such as disposable gloves, emphasizes easy installation and operation in its design, as well as a good user experience. The vending machine will combine with the mini program settings to purchase hygiene products. The developed applet will enable the positioning function for the vending machine. The nearest vending machine can be found through navigation. The applet will also classify sanitary products, and information such as price, material information and function will appear under each type of product. Support for more payment methods (such as WeChat, Alipay, etc.) can improve the user's purchase experience, and campus card payment will be opened in places such as campuses that cannot use online payment. Convenient hygiene needs for students. This self-service vending machine not only brings great convenience to consumers with urgent physiological needs, but also allows operators to put more hygiene products with higher profits into smart vending machines, increasing their income.

Self service vending opportunities install real-time cameras that can generate real-time consumer behavior/demographic reports, allowing operators to collect feedback on hygiene product marketing activities in real time. For example, operators can understand the preferred hygiene products of different populations (grouped by age, gender, and location), allowing them more time to adopt deeper business strategies. Operators of self-service vending machines can also check the status of intelligent vending machines through remote monitoring functions, and receive notifications when viewing potential technical issues for timely handling, avoiding malfunctions of intelligent vending machines and improving consumer shopping experience.

"Smile Xiaowei" combines WeChat and Alipay applet to form a unique advantage. One is that the mini program does not require downloading and installation, and is ready to use, making it very convenient for users to use. And it does not occupy the memory of the phone, which is very convenient and fast, meeting the consumer needs of urgently needed sanitary products designed for. Secondly, mini programs are currently in a stage of development, with a significant market gap, making them highly promising. Mini programs are undoubtedly the best landing tool for helping self-service vending machines for hygiene products. Thirdly, the cost of mini programs is relatively low, which can greatly reduce operational costs. For college entrepreneurs, the funds are relatively small, and developing a specialized app is time-consuming, labor-intensive, and costly. Moreover, the maintenance cost in the future is also relatively high, making it difficult to promote. The experience of the mini program is very good. In the same advertising link, the opening rate obtained by inserting links, end ads and applet ads in the official account is completely different. The opening rate of the applet is about 20 times more than the normal rate. The fifth is that mini programs rely on WeChat for survival and have their own backend system. Mini programs can continuously improve hygiene products and enhance user experience through user profiling and data analysis.

4.2. Sales Channels

The "Smiling Xiaowei" hygiene product self-service vending machine adopts a short channel strategy, where only the operator acts as an intermediary between producers and consumers, forming a relationship between manufacturers, operators, and consumers. Manufacturers provide machines and sell products to operators, who act as an intermediary bridge connecting manufacturers and consumers, receiving products and providing services for resale to consumers. The relationship between operators and customized vending machine manufacturers is based on rental sales: rental sales refer to the situation where the ownership of the machine belongs to the user (i.e. operator) and the deposit is refunded after renting for a certain period of time. For manufacturers, finding a good partner is more important than selling a product; Similarly, for operators, finding a good partner is more important than buying

a good product. So, in order for this self-service vending machine for hygiene products to operate successfully, the operator needs to reconcile the two sides and gain the trust, understanding, support, and cooperation of manufacturers and consumers.

The choice of placement location for self-service vending machines for hygiene products is actually a supplement to physical stores, filling the market gap after the closure of surrounding or certain people's stores. The repurchase rate of hygiene products is the main factor affecting the profitability of vending machines, and the type, quality, price, and other factors of hygiene products are the most direct factors affecting the repurchase rate. In addition, the location of sales points is also crucial, automated vending machines are generally placed in office buildings, schools, factories, and other places with high pedestrian traffic. Based on field research and online survey reports, we have identified the placement locations for self-service vending machines for hygiene products. According to a survey report, more than half of the respondents choose to purchase vending machine hygiene products near public toilets and tourist attractions, followed by public places with high foot traffic, and fewer choose suburban areas. So the vicinity of public toilets and tourist attractions will be designated as key placement points, with a relatively high placement density, and reasonable services and goods will be arranged based on on-site investigations of foot traffic and main consumer needs.

In addition, office buildings generally have a high flow of people and are relatively fixed. The most important thing for office workers is convenience, and automatic vending machines are open 24 hours a day, which is very suitable for the real-time consumption needs of office white-collar workers. Due to its stable flow of people, high demand, and high student quality, campuses are easy to accept new things, making them a high-quality location resource in the hearts of vending machine operators. Especially with the advantage of being a team of college students, placing vending machines on university campuses for trial operation is a high-quality choice.

4.3. Price Strategy

(1) Pricing based on customer value. Based on customer value pricing, customer perceived value is the core of pricing. This pricing method means that the seller cannot design the product and marketing plan first, and then price them sequentially. The company first evaluates customer needs and perceived value, and then sets target prices based on customer perceived value. The target value and price will drive enterprises to make different cost decisions and product design decisions.

(2) Product value pricing. Product value pricing refers to providing customers with the optimal combination of products and services at a fair price. Launch some promotional sets for hygiene product combinations, such as monthly menstrual special sets, with a total price lower than the total selling price.

(3) Value added pricing. Value added pricing enhances differentiation by adding features or services, thereby increasing product prices. If you purchase a self-service vending machine product, you can receive a free cup of hot water or a tissue.

(4) Pricing based on cost. The key to cost based pricing lies in managing the difference between cost and price, that is, how much value a company conveys to customers. The cost of enterprises can be divided into two forms: fixed cost and variable cost. Fixed cost is what we often refer to as indirect expenses, which are costs that do not vary with production and sales volume. Variable costs vary with changes in output levels. The total cost is the sum of fixed costs and variable costs for any quantity of products. After a period of operation, based on sales data analysis, it is possible to increase product prices appropriately in vending machines with higher sales, and improve sales services to enhance user consumption experience. In vending machines with lower sales, prices will be lowered and additional services will be appropriately reduced.

(5) Based on competitive pricing. Competitive pricing refers to a pricing method that refers to pricing based on the strategies, costs, prices, and quantities of competitors. When setting prices, consider the prices of competitors, regardless of whether the final price charged is high, low, or intermediate, the enterprise must ensure that the value received by consumers at this price is maximized. Hygiene products are daily necessities with lower prices. It is necessary to negotiate with manufacturers for low-cost purchasing prices and try to lower the selling price as much as possible. The selling price can be on par or lower than that of competitors, achieving small profits and high sales.

(6) Based on geographic pricing. Geographic pricing is a pricing strategy developed by enterprises for the same product or service in different regional markets based on the differences in market demand and product production and logistics costs in the sales location. Usually, it is necessary to first determine the benchmark price, and then develop corresponding prices for each regional market based on the aforementioned differences. Assess factors such as the location of the vending machine, the surrounding population, nearby convenience stores, and the convenience of purchasing. Then, based on the actual situation of the location, price the products sold by the vending machine differently, such as setting a slightly higher price for places where shopping is inconvenient. There is fierce competition around, and there are many stores selling similar hygiene products such as supermarkets and small shops, so the pricing is lower than in these places.

4.4. Promotion Strategy

(1) Discount strategy. Discount strategy is the most common and effective promotional strategy adopted in product promotions. Sell products in a way that benefits consumers by reducing their selling price. This promotional strategy is suitable for the initial operation of vending machines to attract customers to try and experience. Adopting a discount strategy that takes effect quickly and can quickly boost the sales of hygiene products in the short term, increasing consumer purchasing volume, is the most impactful and attractive to consumers. Meanwhile, adopting a discount strategy can quickly react, catch competitors off guard, and put oneself in a more proactive competitive position.

(2) Additional gift strategy. The giveaway strategy refers to consumers receiving a non product gift at the same time as purchasing the product. This promotional strategy can be applied to products in different situations. The remaining products with the lowest sales volume of vending machines or samples provided by manufacturers can be used as gifts. The strategy of providing gifts can create product differentiation and enhance the attractiveness to consumers; This promotional strategy increases the likelihood of consumers attempting to purchase, encourage consumers to increase the frequency of product use, accelerate repeat purchases, and achieve rapid sales of hygiene products.

(3) Gathering point exchange strategy. The point exchange strategy refers to a promotional strategy where consumers collect purchase vouchers for products, reach the quantity specified by the merchant's activity, and exchange different rewards at the designated location of the merchant. The self-service vending machine adopts a point exchange strategy to stimulate consumers to establish multiple purchasing behaviors and improve the competitiveness of the product.

(4) Free usage strategy. The free use strategy is a promotional method that presents new products or product trials to consumers for free to use or try, and induces consumers to make purchases. It should be delivered free of charge to consumers for trial, in order to attract their attention and create a positive impression after trial, and to generate subsequent purchasing power for the product. The free trial strategy is beneficial for increasing revenue, increasing the speed of vending machines entering the market, selecting targeted consumer groups, attracting

consumers to purchase, and forming a dissemination effect among consumers, enhancing the popularity and affinity of vending machines.

(5) Membership marketing strategy. Membership marketing refers to a team formed in the form of a club with potential or actual consumers as the theme for a certain benefit or service, to carry out promotional, sales, and other activities, in order to promote product sales. When consumers purchase a certain amount of hygiene products from "Smiling Xiaowei", they can apply for free membership through the mini program, enjoy discounts and membership activities. Membership marketing can cultivate consumer brand loyalty. At the same time, by establishing a consumer database, it strengthens the competitiveness of marketing and establishes a fixed consumer group that is not easily known by competitors.

5. Financial Analysis and Forecasting

5.1. Pre Operational Scale

As a student entrepreneurship project, the project takes into account its target audience and application market. In the early stages of pre operation, the product is mainly placed near nearby public toilets, which is convenient for timely communication with users and for collecting usage data in the later stage to further upgrade and improve the product. Afterwards, it will gradually expand to areas with higher traffic and stronger demand such as urban public places and transportation hubs, expand the sales locations and target audiences of traditional hygiene self-service vending machines, and continuously expand the scale of operation through profitable means.

According to the convenient function of Gaode Map, a total of 34 public toilets have been put into operation in Longzihu District until today. We will cooperate with each public toilet and launch targeted vending machines. Among them, 6 public toilets with high traffic will be equipped with two vending machines to meet greater demand. A total of 40 vending machines will be provided. It is predicted that the annual purchase price for selling sanitary products may reach 100000 yuan. At the same time, under the rental purchase model, the first year includes deposits and possible loss reserves. The total cost of machinery and equipment is 1.406 million yuan, and the pre operation cost is 1.506 million yuan.

5.2. Financial Estimates of Income and Expenditure Over the Next Three Years

5.2.1. Cash Flow Statement

Table 1. Cash Flow Statement (Unit: 10000 yuan)

Project	2023	2024	2025
1. Cash flows generated from operating activities			
Cash received from selling goods and providing services	105.02	135.77	218.13
Subtotal of cash flow	105.02	135.77	218.13
Net cash flow generated from operating activities	105.02	135.77	218.13
2. Cash flows generated from investment activities			
Net cash received from handling fixed assets, intangible assets, and other long-term assets	22.4	12.56	8.72
Other cash received related to investment activities	0	0	0
Subtotal of cash inflows	22.4	12.56	8.72
Cash paid for the purchase and construction of fixed assets, intangible assets, and other long-term investments	30.7	11.8	10.2
Subtotal of cash outflows	30.7	11.8	10.2
Net cash flow generated from investment activities	-30.7	-11.8	-10.2
3. Fundraising activities			
Cash received from absorbing investments	100		
Cash received from borrowings	50		
Other cash received related to financing activities	50		
Subtotal of cash inflows	200		
Cash paid for debt repayment	30		
Other cash paid related to financing activities	0.8		
Subtotal of cash outflows	0.8		
Net cash flow generated from financing activities	100		

$$NPV = \sum (CI - CO)/(1 + i)^T$$

Net present value=total present value of future cash flows - initial investment.
 =21665-150.6=660500 (yuan).

The main source of funding cost for this project is equity capital, so its expected return rate is higher than the industry as a whole.

Taking into account various factors, i is taken as 12%. Therefore, NPV ≈ 471800 (RMB 10000)>0, indicating the feasibility of each project.

5.2.2. Estimated Income Statement

Table 2. Estimated income statement (unit: 10000 yuan)

Project	2023	2024	2025
1. Gross income	105.02	135.77	218.13
Less: Product costs	30.70	11.80	10.20
Operating expenses	1.00	1.80	3.24
2. Product sales profit	73.32	122.17	204.69
Less: Management expenses	1.00	1.60	6.21
Financial expenses	0.00	0.00	0.00
3. Total profit	72.32	120.57	198.48
Less: Income tax	18.08	30.14	49.62
4. Net profit	54.24	90.43	148.86

5.3. Financing Plan for the Next Year

In the first year of the project, the development scale should not be too large. Taking into account necessary funds such as the company's basic operating expenses, product investment and potential, and early marketing expenses, it is expected to require a start-up capital of 2 million yuan. The purchase of fixed assets such as machinery and equipment is expected to be 1.406 million yuan, the lease fee for factory buildings is expected to be 50000 yuan, and the purchase and sale of sanitary products are expected to require 100000 yuan. A reserve of 444000 yuan is needed to cope with unexpected situations. The project members raised 500000 yuan by themselves, and the initial financing activity plan raised 1 million yuan. At the same time, they borrowed 200000 yuan (three-year term) from the bank to ensure cash flow, and 300000 yuan (one-year term) from the bank to alleviate the initial financial problems of the enterprise operation. The overall pressure on the enterprise is also relatively low and relatively easy.

6. Risk Expectations

6.1. Market Risk

6.1.1. Market Promotion Risks

(1) Overview of marketing risks

Being in a highly competitive vending machine market and possessing good marketing capabilities, it is of great significance for the survival and development of enterprises to develop feasible marketing strategies. However, in the process of market promotion, there may be various unpredictable factors that hinder market promotion, prevent the achievement of expected goals, and lead to operational problems for the company.

(2) Countermeasures to prevent market promotion risks

1) Establish a sound market research and analysis system. Conduct market research, clarify the characteristics of the target audience, and "know the enemy well and be invincible in a hundred battles.". Through rigorous market research and analysis, timely collection of information about the enterprise itself, competitors, partners, customers, and the market, timely grasp of market trends, in order to stand invincible in a fiercely competitive and uncertain market. 2) Innovate promotion models and increase promotion efforts. On the basis of our existing promotion methods in the market, we constantly innovate and create marketing hotspots: organize various activities, strengthen the awareness of enterprises and products, strengthen connections with merchants and user groups, listen to opinions from all parties through small hearings, and constantly make improvements. We can also seek help from the government to a certain extent.

6.1.2. Competitive Risk

1) Overview of market competition risks

With the rapid development and popularization of the Internet, artificial intelligence, big data, and mobile payments, the vending machine industry in China is showing a booming trend. The development status and market prospects of vending machines are very broad. How to make users believe in us, choose us, and how to make merchants choose us has become a very serious problem.

2) Countermeasures to prevent market competition risks

For emerging markets, it is necessary for enterprises to make timely adjustments to their service models, marketing plans, and strategic positioning based on actual situations to ensure that the survival goals of entrepreneurship can be maintained. They will also strengthen the service innovation, marketing innovation, and monitoring of product quality of the "Smiling Guard" self-service vending machine, prohibit inferior products from entering the vending cabinet, and ensure consumer rights.

6.2. Financial Risks

6.2.1. Overview of Financial Risks

(1) Early stage. In the early stages of company establishment, there were difficulties in financing, significant capital investment, and liquidity risks during operation. The debt to equity ratio reflects the degree of financial leverage. The greater the financial leverage, the higher the return on equity, but the corresponding financial risks also increase. (2) Mid term. After capital investment, there is a risk of poor inventory liquidity, resulting in a significant proportion of inventory. On the one hand, it occupies a large amount of funds for the enterprise, and on the other hand, the enterprise must pay a large amount of storage fees for these inventories, leading to an increase in enterprise expenses and a decrease in profits. For long-term inventory, enterprises also have to bear the losses caused by the decline in market price and the losses caused by poor storage, resulting in financial risks. (3) Later stage. On the one hand, the unreasonable capital structure and investment decisions lead to an unreasonable capital structure of the enterprise, resulting in a decrease in the inflow of foreign funds and thus triggering financial risks. On the other hand, imperfect financial management systems can easily lead to financial loopholes and bring financial risks to enterprises.

6.2.2. Countermeasures to Prevent Financial Risks

(1) Early stage. In the early stages of the company's establishment, there was a significant investment in funds. The financial managers of the company should strictly control their expenses, strive to reduce unnecessary fund outflows, and ensure sufficient reserve funds to respond to emergencies. The managers should conduct various interest rate analyses and promptly identify and handle possible financial problems. (2) Mid term. Timely adjust the inventory structure of the enterprise, improve inventory turnover rate, carefully study and

analyze the level of capital turnover, as well as the internal connections between various assets, scientifically position the scale of fixed assets and inventory reserves to ensure good asset liquidity of the enterprise. (3) Later stage. Choosing the right investment decision, reducing enterprise risks, the content of financial management system covers all aspects of basic activities of the enterprise, including fundraising, investment, and operational capital management, and the management system covers all departments of the enterprise.

6.3. Risk Management

6.3.1. Overview of Risk Management

Due to poor risk management awareness among company staff, unsmooth communication channels for risk management information, and insufficient market awareness, the company does not have the necessary risk response capabilities. Once any risk event occurs, the company will directly experience a situation of fund rupture, unable to continue operating, and seriously threatening the company's economic benefits.

6.3.2. Countermeasures for Preventing Management Risks

(1) Develop a clear risk management plan: Enterprises should develop a clear risk management plan throughout the company, which includes risk assessment, identification, monitoring, and control measures. (2) Regular risk assessment: Enterprises should regularly assess the industry and market environment in order to timely identify new risks and threats, and take corresponding measures to control risks. (3) Strengthen security measures: Enterprises should strengthen the security of their networks and information systems, take necessary measures to ensure the security and confidentiality of company data, and strengthen physical security measures to protect company assets and property. (4) Implement employee training plan: Enterprises should provide relevant training and education to employees, so that they understand the company's risk management plan and preventive measures, and understand how to comply with company policies and regulations. (5) Continuous improvement risk management plan: Enterprises should continuously improve their risk management plan and adjust and optimize it according to the constantly changing market environment and risk situation. (6) Establish emergency plans: Enterprises should develop emergency plans so that they can respond and solve problems in a timely manner in the event of a crisis or unexpected event. In short, risk management and preventive measures are important components of a company's success and sustainable operation.

6.4. Technical Risks

6.4.1. Overview of Technical Risks

Mainly from two aspects: hardware devices and software. Technological Changxing means that the relevant technologies required for innovation are not matched, mature, and the corresponding facilities and equipment are incomplete. The market forecast for technological innovation is not sufficient. Any new technology or product must ultimately undergo market scrutiny. If the market adaptability, progressiveness and profitability of technology cannot be predicted scientifically, the innovative technology will be at risk at the initial stage. This risk arises from the technology itself and is therefore a technical risk. This risk arises from new products not necessarily being accepted by the market, or being replaced by other similar products after being launched in the market. The losses incurred include losses in the process of technological innovation and development, transfer and transformation. This means that there are indeed risks in technological innovation for enterprises, and it is not necessarily the more advanced the technology, the better.

6.4.2. Countermeasures to Prevent Technological Risks.

(1) Code quality issues: Code quality issues may lead to system failures, vulnerabilities, and security issues. To reduce such risks, enterprises should adopt the best coding practices and

conduct code review and testing before testing. (2) Data loss and recovery: Data loss may be caused by factors such as hardware failures, software failures, human errors, and natural disasters. To avoid data loss, enterprises should regularly backup data and ensure strong recovery capabilities. (3) Network security: Network security risks include hacker attacks, viruses, spyware, botnets, and denial of service attacks. To prevent these threats, companies should take necessary measures such as encryption, firewalls, antivirus software, identity authentication, and access control. (4) Technology platform risk: Enterprises use different technology platforms and tools to develop and deploy software. If the selection is incorrect, there may be incompatibility, performance, scalability, and security issues. To reduce these risks, enterprises should adopt mature technology platforms and tools, and evaluate and test them before making a choice. (5) Project management risks: Project management risks may lead to delays, budget overruns, misunderstandings, and communication issues. To reduce these risks, enterprises should implement the best project management practices and use professional project management tools to help track and control projects.

References

- [1] Xiao Jun, Wang Lei. Talking about self-service vending machines and online secure payments [J]. Network Security Technology and Applications, 2019 (09).
- [2] Liu Jiawei, Jia Jimeng. Exploration of Innovation and Entrepreneurship Models for College Students Based on School Enterprise Cooperation: Taking the New Operating Model of Korean Cosmetic Self service Vending Machines as an Example [J]. Industrial Innovation Research, 2021 (05).
- [3] Hu Mengting. Research and Design of Aggregated Payment Platform for Self service Sales System [D]. Zhejiang University of Technology, 2017.
- [4] Xiao Weiliang. Research on QR code self-service attendance sales equipment and its usage methods [J]. Computer Programming Skills and Maintenance, 2023 (08).
- [5] Liang Yongxin, Wang Fengyue. Development status and trend of vending machines [J]. Contemporary Economy, 2019(02).
- [6] Wang Haiping, Zhu Jun. Game model analysis of urban shopping mall location selection and pricing strategy [J]. Science & Technology Plaza, 2006(06).
- [7] Zhang Jian, Wu Ting, Liang Jiayu, etc. Research on the market survey of female sanitary products vending machine [J]. Industry and Technology Forum, 2019,18 (07).
- [8] Lai Xiaofeng. Cross-platform competition research [D]. Hunan University, 2019.