

COMMUNITY INTELLIGENT ACCESS CONTROL SYSTEM

Xuerong Zhang¹, Xian Xiao²

^{1,2}Graduate School, Southeast Asia University, Bangkok, Thailand

E-mail: 13546317672 E @163.com

ABSTRACT

Our company is a community intelligent access control system in Zhong guan cun and a designated supplier for government procurement of central state community intelligent access control system organs, mainly engaged in providing system integration solutions and technical services for education, broadcasting and publishing systems, government, news media and other fields. In these two years of epidemic outbreaks, epidemic control measures around the strict, community management conflicts are more prominent. For this reason, our company found that the community access control system products market is relatively short, and a single function, the community access management challenges, some areas because vehicles can not quickly enter and exit the community caused by the surrounding road congestion. For this reason, our company decided to develop a set of intelligent access control system with relatively convenient functions.

In the product function mainly includes three major parts: personnel and personnel access management, vehicle and vehicle access management, community parking management.

Keywords: community intelligent, Control system

Executive Summary

The product function is mainly focused on the access identification management of the two largest management modules of community people and vehicles, which serves the community property management on the one hand and community residents on the other. We conducted a questionnaire survey on property managers and found that the percentage of community investment in epidemic prevention and control reached 27.1% and 44.86% respectively, while the control effect was poor. 18.69% of the property managers think that it is difficult to carry out the epidemic prevention and control work in their own communities. The intelligent access control developed by our company now can help the community to strengthen the management of people and vehicles, and the epidemic prevention and control work is convenient.

Our analysis of the medium and long-term development trend of the industry found that the intelligent access control system is also a necessary facility for community management in the construction of smart communities, and its market prospects are broad. Through SWOT analysis, it was determined that our company still has certain competitive ability in this industry.

After further study of the market, it was found that there are few product categories in the market, relatively few companies involved in the market, and not many competitors specializing in these products. The current market players offering related products are mainly large companies that tend to be complete solutions for smart communities, or small companies that offer a single simple product. None of them pay attention to the objective demand and customer value of the current community for access to community control issues. At the same time, we also analyzed the purchasing power of community properties for the product and their purchasing style to indeed match our design of the product. Through cost analysis and sales forecast, the pricing of the product is also more acceptable to the community based on solving the needs of the community and resolving the contradictions of property enterprise management.

In order to make the products more in line with market demand and meet the needs of customers, in the marketing strategy, we adopt a phased, customer type marketing products. We consider giving priority to developing new product markets based on our existing customer resources, improving product features and customer experience, and then vigorously promoting our products to quickly capture market share. In terms of product pricing, we also adopt pricing by customer type to improve the match between different customers' needs and products.

In order to reduce project risks, we adopted a conservative strategy in operation, focusing on the Beijing market, and the project started with our own capital, without using loans. In the first stage, we adopted the way of breaking in with mature customers to improve the product features and enhance the customer experience. In the second stage, with sufficient capital, we appropriately increase the market share without pursuing share and occupancy. In the third stage, after the product features are mature and the experience is stable, speed up the market promotion in order to increase the profit of the whole project. The same strategy is adopted for personnel investment, and there is no rush to expand the implementation team in order to reduce personnel costs and financial pressure.

Through industry analysis, market analysis and the development of marketing strategies and operational plans, the project basically pays for itself after financial projections are calculated to develop 50 customers in the first year. The overall financial pressure on the company is not significant, and in subsequent years, the project is in a profitable state. If the project marketing plan is implemented according to the project, it is likely to achieve profitability in the first year.

Section 1: Company Description Company Profile

Beijing Shengxin Computer Network Technology Co., Ltd. was established in Beijing in 2001, with a registered capital of 10 million RMB, legal representative is Ms. Xia Ke, the company is located in Zhong guan cun, a high technology park. 2012 was selected as a designated supplier for procurement by Beijing government authorities, 2015 was selected as a designated supplier for government procurement by the central state authorities. 2019 was selected as a national high-tech enterprise, 2020 Passed ISO9001 quality system certification.

Our company provides a 3-year system and technical warranty service for the hardware and software within the contract for community intelligent access control projects.

1. Our company can assist community users in troubleshooting and recovery.

2. Our system-level warranty service can be controlled by the company's backend service process to ensure that major failure diagnosis time does not exceed 2 hours and failure recovery time does not exceed 8 hours. In case of hardware failure, our company can coordinate and supervise the whole warranty process of the manufacturer to ensure the quality and time of the warranty.

3. During the maintenance period, if the project is changed or upgraded or system failure occurs due to our responsibility, which causes the purchaser to be unable to use the system normally, we promise that we can extend the corresponding warranty period to ensure the interests of the purchaser.

Section 2: Industry Analysis

2020 global epidemic outbreak, the capital strictly into the management of the capital, strict and tighten the social surface prevention and control, strict community (village), units, public places to enter the check. With the normalization of national epidemic prevention and control, the community's epidemic prevention and control work is cumbersome and complicated. Community epidemic prevention and control governance, which effectively reduces the labor intensity of street community workers and reduces the complexity of the workflow, must introduce technology to assist the community in comprehensive management. Beijing is an international metropolis with a relatively large foreign population and movement of people, so community safety management is a long-term and arduous task.

Therefore, the demand for intelligent access control system is objective and urgent. According to the statistics of Anju Customer Real Estate Research Institute, in 2022, there will be nearly 20,000 stock cells in Beijing, and the market scale is huge.

Industry size, growth rate and sales forecast

In 2022, there are nearly 20,000 stock communities in Beijing. Half of them are distributed in Chaoyang District, Haidian District, Xicheng District, Fengtai District, Dongcheng District, these five areas, accounting for 16%, 15%, 11% and 10%, 8%, accounting for 60% of the total number of cells, is the largest number of cells in Beijing. Pinggu District, Yanqing District, Mentougou District, Shijingshan District and Huairou District, these five areas will have a relatively small number of cells, accounting for about 2% of the level. Several other regions have basically comparable stock of subdivisions, with a percentage between 5-8%.

In terms of the age of the plots, 56% of the total number of plot points were 5-20 years old, 22% of the total number of plot points were 20-30 years old, and 78% of the total number of points for both together.

In terms of the overall quality of the neighborhood, low-quality neighborhoods account for a relatively large share, accounting for 55% of the total, while medium-quality ones account for 23%, and the two together account for 78% of the total.

At present, our company's implementation capabilities, system development is complete, the complete installation of a cell access control system takes about two weeks, so that a year can be installed in about 50 cells. According to the installation cost of 75 wan yuan per cell, the annual operating income is about 37.5 million yuan.

With the increase in installation levels and the expansion of the installation team, it is expected that the number can be increased by 50% per year thereafter. At this rate, it is expected to last about 5 years.

Industry Characteristics

The industry participants are mainly divided into four categories: hardware suppliers, community property enterprises, integration service providers and external government and public utility enterprises.

1. Hardware product suppliers: such as cameras, gates and other product suppliers.

2. Property management enterprises: Property enterprises vary greatly in the market because of their size, so their participation in the market and market influence are different, so their bargaining power is not the same.

3. Service integration enterprises: such as us, which integrate many hardware functions and provide specific services for property enterprises. These enterprises are not consistent with the value of the services and service objectives they provide, and at present, homogenization is still relatively low. And the stronger enterprises are more inclined to provide complete solutions, which are more difficult to land. From the analysis of the whole industry development stage, it still belongs to the initial stage. Service integration enterprises also vary greatly in their participation and bargaining power in the market based on the characteristics and capabilities of their services.

Industry trends (environmental trends, business trends)

In recent years, technologies such as IoT, big data, cloud computing, artificial intelligence, pattern recognition, and edge computing have developed rapidly, integrating various data resources such as people, equipment and facilities, houses, vehicles, and organizations in community scenarios, providing technical possibilities for community wisdom management, risk management, and wisdom services.

In the construction of smart communities.

In terms of safe community construction.

In the community equipment implementation risk monitoring.

In the community security risk prevention and control.

In addition, although some of the various AI-based intelligent applications are used in some community video surveillance systems, but the scale of AI-based video security construction is still relatively small, lacking the use of video information for analysis, integrated linkage governance work model. In summary, the existing video security system in the community is difficult to achieve community security events in advance of active monitoring, prevention and timely disposal, the urgent need to build community intelligent video security platform, so as to meet the needs of intelligent, refined community security management.

SWOT Analysis

At present, the construction of intelligent communities, still in the initial stage of the community hardware and software, interconnection system, cloud platform into use, mainly for community security, street government networking, basic travel, etc. to make some changes, from the industry applications, has not really achieved large-scale applications, but the general trend of integration into the social grassroots service governance has emerged.

(1) Strengths of our industry.

- 1.Solution implementability.
- 2.Good customer base.
- 3. Cost advantage.

(2) Industry weaknesses of our company.

- 1. Large upfront capital investment.
- 2. The industry is more competitive.
- 3.Older communities have fewer sources of income and less capacity to improve facilities.

(3) Industry opportunities for our company.

- 1. The market is relatively large.
- 2. The cost advantage is obvious.
- 3. Huge number of existing customers.

(4) Industry threats to our company.

- 1.Software development companies around the world are grabbing market share.
- 2.More docking systems will make integration more difficult and costly, and profit margin will shrink.

Section 3: Market Analysis and Marketing Plan

3.1 Market segmentation and selection and positioning of target market

From the following questionnaire data and charts, we can see that the number of population in more than 5,000 people, control vehicles in more than 500 communities accounted for 39.25% and 36.45%, respectively, indicating that the current medium and large communities account for more than three layers, the more people and cars managed by the community, the number of supporting access control system hardware will increase, and our profit margin will become larger.

3.2 Competitor Analysis

I selected three representative companies to analyze the impact on the competitiveness of our company from the perspective of industry strategic orientation and business objectives.

An overview of the competitive influence of these three competitors on our company is shown in the following table.

Name	Industry strategy	Business objectives	Competitive influence
Zhongke cerebrum	Overall solution of smart community	High quality community	More

Name	Industry strategy	Business objectives	Competitive influence
Beijing kuangshi	Video monitoring field	industrial park	No influence
Shenzhen duodu	Intelligent terminal and comprehensive governance platform	Small and medium-sized communities in southern cities	Lesser

3.3 Estimation of annual sales and market share

According to the analysis of 3.1, the target is 11,000 cells in Beijing, and after five years of implementation, each cell is calculated at RMB75 wan yuan per set, then the whole market size is RMB 1650 million per year.

company expects to implement 50 plots in the first year and the annual turnover is: $50 \times 75 = 37.5$ million RMB. Subsequent years will grow at a growth ratio of about 50% per year. The five-year situation is shown in the following table.

	Item Quantity	business volume (RMB: million)	share-out (%)
Year 1	50	37.5	0.454545%
Year 2	75	56.25	0.681818%
Year 3	100	75	0.909091%
Year 4	120	90	1.090909%
Year 5	150	112.50	1.363636%
Total	495	371.25	4.5

The project is implemented in five years to complete the Beijing market plan. In the first year, we plan to select 5-10 of more than 100 existing institutional customers for trial runs to improve product functionality and customer experience, and then market up to 30 of these customers. Other customers 20. In the second year, with mature products and construction, the market customers will be developed to 75, 100 in the third year, 120 in the fourth year and 150 in the fifth year.

3.4 Overall marketing strategy

The introduction of "black technology" to help prevent and control epidemics greatly improves the efficiency of access management and health inspection; the use of "Internet +" technology to create a "cloud platform", residents can complete operations at home At the same time, it also establishes an effective bridge between neighborhood communication and community governance.

Product company's 4ps.

Product: community intelligent access control system.

Price: strictly in accordance with the relevant departments of Beijing pricing system guidance implementation, in the case of ensuring the recovery of product costs, now pre-sale of each set of access control system 750,000 yuan, depending on the number of hardware equipment and control modules required by each community and the final determination of the contract amount

Promotion: for the specific circumstances of different communities to carry out the contract amount of discounts

Place: each community in Beijing and independent epidemic prevention and control units such as administrative villages.

3.5 Market target analysis and target market determination

The first year to develop the market as the main goal, focus on product function improvement and improve customer experience.

To sum up, all the communities over 10 years old are potential customers of our project, and the main target customers are about 10 years old communities.

3.6 Pricing Strategy

The implementation cost of the project is about RMB325,000 yuan, which mainly includes hardware cost, software amortization, staff salary, sales cost and other costs. Adding the maintenance cost and hardware damage cost in the later stage of the project, the base pricing is about RMB750,000 yuan. Unit: RMB million

	old customer	Small communities	midsize communities	Large communities
Price	0.67	0.7	0.75	0.8-0.95

3.7 Promotion Strategy

According to the company's current customer resources and customer base, our promotional activities can take the following strategies.

1. Door-to-door sales to existing customers, this strategy is only implemented for the existing customer base.
2. When the product is basically stable and there are some influential customer success stories, we can use our partnership with Beijing Radio and TV Group to promote the product to the public through Beijing TV's Life Channel, and use the power of the public to lose the property to improve the service and facilities in the community. This approach has a wide range and can expand the influence of the product in a short time, quickly expand the customer base, enhance market share and grab market profits.
3. Participate in the centralized projects of the current smart community vendors. By participating in the wisdom community project, the yield of the project can be reduced, but in this way, you can integrate into the tide of wisdom community in advance and expand the customer base of the product.
4. Develop the market outside Beijing through the way of foreign customer promotion, and lay out the national market early

Section 4: Management Team and Company Structure

4.2 Board Members

At present, there are four members of the company's board of directors, one chairman, one vice chairman, one general manager and one director. The chairman is Ke Xia, the vice chairman is Xiaohui Wang, the general manager is Hong Liu, and the director is Jing Zhang.

4.3 Advisory Board

The company's advisory board consists of the following people.

- 1、 Zhao Run, editor-in-chief of Guangming Daily, is responsible for the overall operation of the company
- 2、 Che Guo, Director of the Asset Division of Guangming Daily, responsible for the procurement process of the company
- 3、 Wu Qing, Chairman of Beijing Transocean Future Technology Development Co. Responsible for the company's customer relations
- 4、 Qin Feng, Chairman of Beijing Xinchuang Rongtong Technology Co. Responsible for the company's customer relations
- 5、 Feng Rui, Chairman of Beijing Beike Bluelight Lab Technology Co. Responsible for the company's customer relationship
- 6、 Kang Kang, General Manager of Zhongdian Great Wall Technology Co. Responsible for the product design and development of the company's projects
- 7、 Mr. Tu Yan, General Manager of Aisino Four Creation Technology Co. Responsible for the product design and development of the company's projects

5.1 Business model and procedures

Business Process Description.

The business process of this product is divided into three parts: personnel in and out, vehicles in and out, and outsiders in and out, respectively. The specific process is as follows.

1. Personnel in and out: when personnel enter and exit the gate, first collect the face biometric value, and then query and compare with the community's face feature value library. If the comparison does not pass, the gate will not be opened.
2. Vehicle access: vehicle access has two identification methods, one is license plate recognition, through the license plate number to the vehicle library for query, if found, the gate is open, the vehicle can enter and exit the community, if no query gate does not open. The second is through the identification of the driver, the vehicle in and out of the district, the first collection of the driver's face features value, to the district face features library for query, and comparison, if the comparison is passed, the gate is open. If the comparison is not passed, the gate will not be opened.
3. Outsiders in and out: outsiders or people who do not pass the face comparison can enter and leave the district by registration, when registering, the system collects the physical characteristics of the registrant, and after the person enters the district, the track is recorded and analyzed, and the data is recorded into the visitor database.

5.2 Business Location

The software is mainly marketed to independent epidemic prevention and control units such as various communities and administrative villages in Beijing. It can also be sold to communities in every province and city in China. As long as our software platform is purchased in the first year, we can collect technical service fees for subsequent years, and our company should continue to earn its technical service fees once and for all if the purchasing unit does not replace its hardware facilities.

5.6 Development Plan

The entire development of the system requires six phases, which are divided into: project planning, overall design, system development, system testing, system intermodulation and system validation. The project plan and overall design are partially parallel, development and testing are partially parallel, testing and intermodulation are partially parallel, and validation and testing can be parallel, with a total planned cycle time of 90 days.

Engineering Phase \ Time	1-5	5-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
Project Plan										
Overall design										
System Development										
Testing										
Commissioning										
Validation										

Section 6: Financial Forecast

6.1 Projected financial statement

According to our company's operation in the past years and the financial data of similar technology companies in Beijing, we now forecast the revenue of the first year of the project from January to December, as shown in the following chart: (Unit: RMB million)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hardware revenues	22.50	45.00	45.00	67.50	90.00	90.00	112.50	112.50	112.50	135.00	135.00	157.50
Technical service revenues	7.50	15.00	15.00	22.50	30.00	30.00	37.50	37.50	37.50	45.00	45.00	52.50
Software revenues	45.00	90.00	90.00	135.00	180.00	180.00	225.00	225.00	225.00	270.00	270.00	315.00
Project revenue	75.00	150.00	150.00	225.00	300.00	300.00	375.00	375.00	375.00	450.00	450.00	525.00

Note: Project revenue consists of three components: hardware revenue, software revenue and technical service revenue, which account for 30%, 60% and 10%, respectively.

Based on the estimated sales and market share in 4.4 annual sales, the company's revenue for the next 4 years is shown in the following chart: (Unit: RMB million)

	2022	2023	2024	2025	2026
sales count	50	75	100	120	150
sales	3750	5625	7500	9000	11250

Note: As can be seen from the table, the first 2 years of project implementation are not progressing very fast, and after the latter 2 years of technical mastery and business proficiency, the number of project implementation can be completed 150 communities a year by 2026, and the sales revenue can enter the 100 million mark.

6.2 Projected Cash Flow

The company's financial statements and cash flow statement can fully reflect the company's operation and profit and loss situation. Based on the company's projected financial statements for 2022, combined with the current bank interest rate and the industry growth rate of this software, the cash flow flow statement for 2022 and the cash flow statement for the next 4 years are expected to be as follows: (Unit: RMB million)

Cash Flow Statement For the Month Ended, 2022												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cash balance, beginning of year	500.00	486.15	479.05	471.95	471.60	478.00	484.40	497.55	510.70	523.85	543.75	563.65
Cash flows from operating activities												
Cash received from the sale of goods and provision of services	75.00	150.00	150.00	225.00	300.00	300.00	375.00	375.00	375.00	450.00	450.00	525.00
Total cash inflow from operating activities	75.00	150.00	150.00	225.00	300.00	300.00	375.00	375.00	375.00	450.00	450.00	525.00
Cash paid for goods	48.75	97.50	97.50	146.25	195.00	195.00	243.75	243.75	243.75	292.50	292.50	341.25
Cash paid to employees	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
All taxes paid	3.75	7.50	7.50	11.25	15.00	15.00	18.75	18.75	18.75	22.50	22.50	26.25
Other operating-related cash paid	21.35	37.10	37.10	52.85	68.60	68.60	84.35	84.35	84.35	100.10	100.10	115.85
Total cash outflow from operating activities	88.85	157.10	157.10	225.35	293.60	293.60	361.85	361.85	361.85	430.10	430.10	498.35
Dividend												
Total cash flows from investing activities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net change in cash balances	-13.85	-7.10	-7.10	-0.35	6.40	6.40	13.15	13.15	13.15	19.90	19.90	26.65
Cash balance, end of period	486.15	479.05	471.95	471.60	478.00	484.40	497.55	510.70	523.85	543.75	563.65	590.30

2022-2026 Cash Flow Statement					
For the Year Ended, Dec., 31					
	2022	2023	2024	2025	2026
Cash balance, beginning of year	500.00	545.15	664.83	835.38	1,057.73
Cash flows from operating activities					
Cash received from the sale of goods and provision of services	3,750.00	5,625.00	7,500.00	9,000.00	11,250.00
Total cash inflow from operating activities	3,750.00	5,625.00	7,500.00	9,000.00	11,250.00
Cash paid for goods	2,437.50	3,656.25	4,875.00	5,850.00	7,312.50
Cash paid to employees	180.00	185.00	235.00	245.00	255.00
All taxes paid	187.50	281.25	375.00	450.00	562.50
Other operating-related cash paid	854.70	1,263.15	1,673.90	2,010.30	2,524.20
Total cash outflow from operating activities	3,659.70	5,385.65	7,158.90	8,555.30	10,654.20
Dividend	45.15	119.68	170.55	222.35	297.90
Total cash flows from investing activities	45.15	119.68	170.55	222.35	297.90
Net change in cash balances	45.15	119.68	170.55	222.35	297.90
Cash balance, end of period	545.15	664.83	835.38	1,057.73	1,355.63

6.3 Break-even analysis

Projects must realize the important role of applying break-even point analysis when working on business forecasting, clarify the possible risk problems and the direction of risk prevention, and summarize scientific and reasonable countermeasures to eliminate economic risks during project operation, give full play to the application effect of break-even point, and promote the sustainable and healthy development of enterprises.

This shows that the sales revenue at the break-even point is 37.04 million yuan. The sales revenue of this project in the first year is 37.5 million yuan, which is higher than 37.04 million yuan, indicating that the project is profitable from the first year.

The break-even analysis chart is as follows.



6.4 Ratio Analysis (ROE, ROA)

To measure the profitability of a company or a project, we usually look at the two indicators of ROA and ROE.

Based on the financial statements projected in 9.4 and 9.5, the ROA, ROE for 2022-2026 are calculated and analyzed as follows.

	2022	2023	2024	2025	2026
Return on total assets	14.28%	31.41%	36.25%	37.98%	40.31%
Return on common equity	16.56%	35.95%	40.73%	41.92%	43.82%

Note: The initial investment capital of the intelligent access control project is RMB 5 million, and the project is profitable in the first year of implementation, with ROA reaching 14.28% and ROE reaching 16.56% in the first year. If the project can develop smoothly according to the project's operation plan, the ROA and ROE of the project can reach about 40% by 2026, indicating that the project has a high level of investment return and the implementability of the project is very high.

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