

Based on the Analysis of Information Management of Electronic Equipment Assets of Tobacco Companies on A Long-Term Scale

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Abstract. This paper focuses on the "five more and two less problems" existing in the asset management of Z Tobacco business, and conducts informatization and visual analysis by systematically investigating the current situation and pain points of the electronic equipment assets of Z Tobacco Company. The results show that desktop computers, printers and notebook computers are the top three in the electronic equipment asset category of Z Tobacco. Disposal assets accounted for 13.79%, idle assets accounted for 5.98%, assets under management accounted for 89.10%, and electronic equipment included in quota management accounted for only 18.37%. The new assets show that the new equipment reached a peak in 2015 (601), and the new rate decreased in the past two years. The asset allocation of departments shows that the per capita number of equipment in the municipal bureau is the highest, and the bureau in district J is the lowest. The analysis of the idle assets system shows that the departments, categories and years with the highest idle rates are: municipal bureau, desktop computer, 2012 and 2013. The disposal rate of assets shows that the asset disposal rate was 100% before 2003, > 50% before 2011, <2% from 2013 to 2014, and 0% after 2015. The analysis of the quota standards for specific equipment shows that the municipal bureau is the department with the largest positive difference between the per capita percentage and the upper limit of the quota, and the bureau of District J is the department with the largest negative difference; the existing number of desktop computers basically exceeds the upper limit of the quota, and the number of notebook computers and printers/photocopiers are within the upper limit of the quota. The conclusion of the study is that the proportion of electronic equipment assets of company Z is in line with the normalized needs of electronic office equipment, but the company's old equipment is too redundant, so the timely disposal and update of old equipment should be strengthened, and the asset quota management should be improved, idle assets should be revitalized, the utilization rate of assets should be improved, and the asset supervision and effective allocation between departments should be strengthened. Finally, through the quantitative analysis of the purchase and disposal of electronic equipment of Z Tobacco Company, two decision-making models are proposed, taking two departments as examples, and the practical significance and implementation of the models are expounded from five dimensions, so as to provide better decision-making basis and standards for the company,

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and the research results can provide theoretical support and technical support for the upgrading and construction of tobacco commercial asset management system platform.

Keywords: Asset management; Electronic Equipment; Informatization; Tobacco companies

1 Introduction

With the advent of the information age, in all walks of life has basically popularized the internal management environment based on computer and network, asset management business is an important component of the daily management activities of enterprises^[1,2], the quality and efficiency of asset management business directly determine the utilization rate and efficiency of enterprise assets, and the effective asset management business model can play the maximum benefit and role of enterprise assets^[3-5]. Due to the monopoly system and vertical management of the tobacco industry, there are many common problems in the asset management of tobacco commercial enterprises, which are basically the problems of asset management awareness, system construction, management department setting, daily management standardization, asset allocation rationality, information management level, etc., which have reference for strengthening industry asset management^[6]. A large number of researchers generally believe that to achieve lean asset management in the tobacco industry, it is necessary to update the management concept, clarify the asset allocation standards, improve the asset management system, clarify the responsibilities of the management department, improve the level of informatization, and strengthen the assessment of asset management efficiency^[7-8]. In addition, some industry practitioners have also analyzed and studied asset management from the perspectives of whole-process management, asset allocation, asset internal control, and asset audit risk prevention^[9,10]. From the research results of asset management in the tobacco industry, the concept of asset management and financial management are relatively traditional, and there is a lack of research on asset system management in the tobacco industry^[11,12]. **At present, the asset management of tobacco system is faced with a large number, many types, too many uses, more waste and depreciation, more process requirements, and fewer monitoring and traceability methods.** By combing the current situation of Z Tobacco's commercial asset management, this study finds the pain points in the existing asset management process and system, and proposes a complete set of improvement plans and management structure, simplifies the company's business processes, accelerates the process of enterprise informatization, and promotes the research and application of Z Tobacco's commercial asset management information system. The whole process management of scrapping or recycling, as well as the whole life cycle data control of the internal assets of the unit; In order to reduce the company's internal non-value-added activities, reduce the waste and depreciation of assets, and maximize the value of assets in the enterprise, so as to ensure the health and stability of the internal asset flow of the enterprise, improve the rationality and efficiency of asset allocation, and improve the digital and refined management level of the enterprise.

2 Overview of the research object

Z City Tobacco Company was established in 2005, under the dual leadership of the Provincial Tobacco Company and the Z Municipal Government, and is mainly managed by the Provincial Tobacco Company. At present, it has 14 government departments, 3 centers, 9 districts/counties, and a total of 11 county-level bureaus (branches). The company has 27 departments (departments), including: office, regulation department, monopoly department, party and mass department, technology center, finance department, audit department, internal management office, supervision department, human resources department, agency service center, planning department, information center, security department, cigarette marketing center, tobacco production and operation center, logistics center, A County Bureau, B County Bureau, C County Bureau, D City Bureau, E District Bureau, F District Bureau, G District Bureau, H District Bureau, I District Bureau, J District Bureau.

The business scope of Z City Tobacco Company includes: licensed business projects (operating with a valid license): cigarette wholesale, local (city) purchase of tobacco leaves for national sales, local (city) wholesale purchase of confiscated cigarettes, and local (city) wholesale purchase of imported cigarettes in the province (autonomous region, municipality directly under the central government). General business items: loading and unloading services, warehousing services (tobacco leaves only), tobacco technology research and development and services.

3 Research methods

This paper mainly adopts theoretical analysis method, case analysis method and quantitative analysis method, combines theory and practice, and relatively analyzes Z tobacco by proposing, analyzing and solving problems.

The company's electronic equipment asset management conducts information analysis and research. On the basis of the analysis of relevant theories, through field research, the specific situation of the company's fixed asset management was mastered. After analyzing the problems and causes of the fixed asset management of Z Tobacco Company, some suggestions were put forward to improve the asset management of Z Tobacco Company, and finally the research results were summarized.

Data processing and charting were done using SPSS 20.0, Origin 8.0, excel 2021, and Java 17.

4 Information analysis of the whole process management of electronic equipment assets

4.1 Asset Classes

The asset classes of electronic equipment assets of Z City Tobacco Company are divided into 49 items, and the top 20 assets account for 93.80% of the total assets, in order from large to small: desktop computers, printers, notebook computers, law enforcement recorders, copiers, audio and video equipment, cameras, integrated computers, switches, handheld terminals,

scanners, tablet computers, video cameras, X86, projectors, other computers, information equipment, fax machines, other network communication equipment, routers, Uninterruptible power supply (UPS). The top 10 assets accounted for 80.31% of the total assets, and were the main electronic equipment assets of the tobacco company in Z city. Desktop computers accounted for the highest proportion at 35.81%, followed by printers at 9.62% and laptops at 5.98%(See Fig. 1).

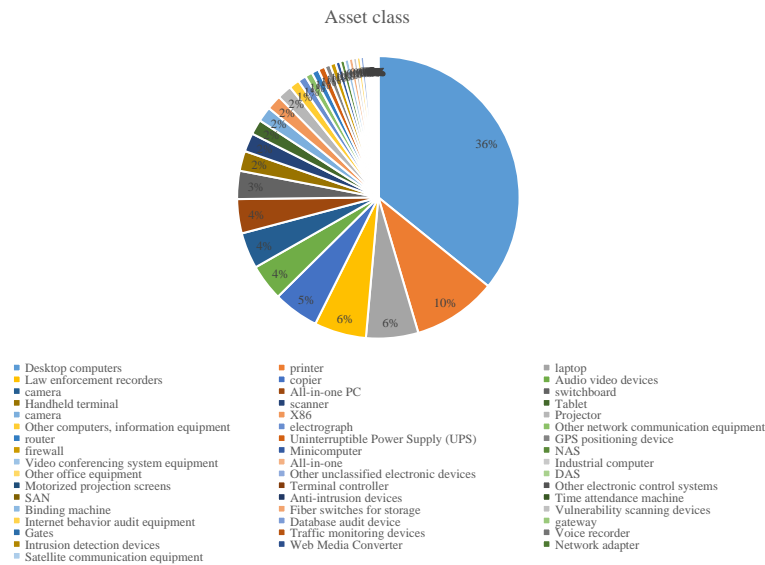


Fig. 1. Categories of electronic equipment assets of Z Tobacco Company

4.2 Asset status, use and management methods

The state of assets is divided into four states: mothballed, idle, disposed of, and in use, among which the assets in use account for the highest proportion (79.91%), followed by the disposed state (13.79%), the idle state (5.98%), and the last state of mothballing (0.32%). The use of assets is divided into management and production and operation, accounting for 89.10% and 10.90% respectively, and the electronic equipment assets of Z Tobacco Company are mainly management. Whether it is included in the quota management is divided into yes, no and unclear, accounting for 18.37%, 53.98% and 27.65% respectively, of which the assets that are not included in the quota management account for the highest proportion, followed by the unclear whether to include the quota management assets, and finally the inclusion of the quota management assets(See Fig. 2-A/B/ C).

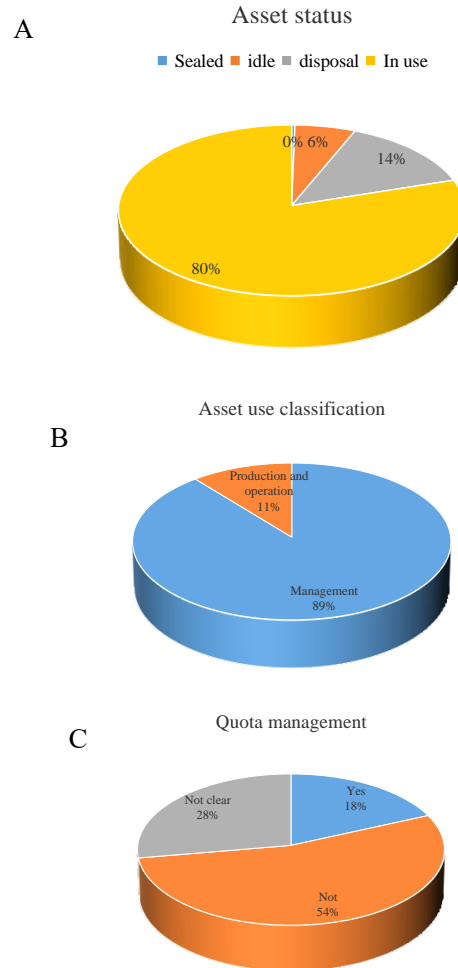


Fig. 2. Status, use and management mode of electronic equipment assets

4.3 Added asset information analysis

4.3.1 The date on which the asset was put into use

Z city tobacco company electronic equipment assets put into use of the date recorded from 1999 time, 24 years of the company's total number of electronic equipment assets showed a trend of first increase and then decrease, before 2004 the total number of new equipment assets maintained in single digits, 2005-2007 slightly increased, maintained in the tens of digits, after 2008 the total number of new equipment assets for the hundreds, 2011-2013 the number of new equipment are higher, respectively, 463, 530 and 511, the total number of new electronic equipment assets reached a peak in 2015 (601), and the number of new equipment decreased in the past two years, only 164 in 2021 and 148 in 2022(See Fig. 3).

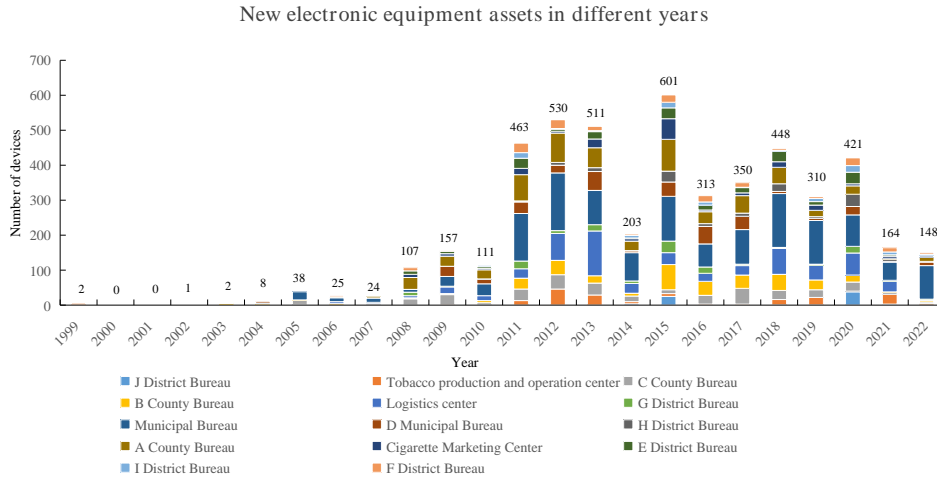


Fig. 3. Record chart of the commissioning date of electronic equipment assets

4.3.2 Asset growth rate

The growth rate of electronic equipment assets of Z tobacco company began in 2000, and the average growth rate of the company's electronic equipment assets in 23 years was 49.99%, of which the growth rate was the highest in 2005, reaching 292.31%, followed by 160.00% in 2004, 107.00% in 2008, and 97.47% in 2011. In 2015, the growth rate of assets remained basically stable(See Fig. 4).

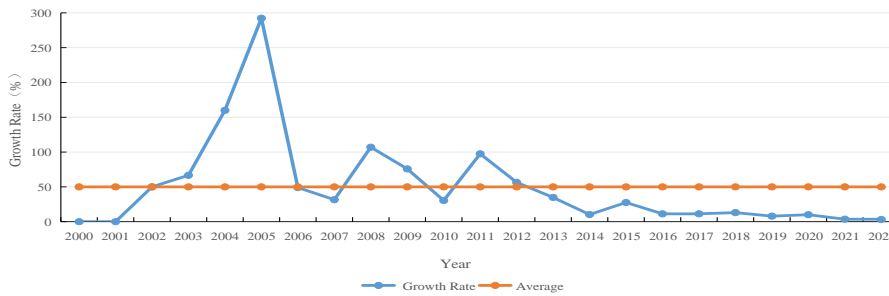


Fig. 4. Chart of the growth rate of electronic equipment assets in different years

4.4 Asset allocation of different departments

4.4.1 Numerical analysis of assets in different departments

The organizational departments of Z Tobacco Company are involved in the use of electronic equipment assets, and the number of equipment from large to small is: Municipal Bureau, A County Bureau, Logistics Center, B County Bureau, C County Bureau, D Municipal Bureau, E District Bureau, Cigarette Marketing Center, Tobacco Production and Operation Center, F District Bureau, WG District Bureau, H District Bureau, I District Bureau, J District Bureau, and the number of electronic equipment used is 1409, 617, 602, 371, 360, 336, 219, 194, 183,

180, 152, 142, 97, and 75, accounting for 28.54%, 12.50%, 12.19%, 7.51%, 7.29%, 6.81%, 4.44%, 3.93%, 3.71%, 3.65%, 3.08%, 2.88%, 1.96%, and 1.52%, respectively. The department with the highest total number of equipment is Municipal Bureau, followed by A County Bureau, and the third is the logistics center(See Fig. 5-A).

From the point of view of the number of electronic equipment users in various organizational departments of Z Tobacco Company, the number of users in each department and the total number of equipment are not completely related, and the number of people in each department from large to small is A County Bureau, D Municipal Bureau, Municipal Bureau, Logistics Center, B County Bureau, C County Bureau, J District Bureau, H District Bureau, E District Bureau, I District Bureau, F District Bureau, WG District Bureau, Tobacco Production and Operation Center, and Cigarette Marketing Center. The largest number of people is the A County Bureau, followed by the D Municipal Bureau, and the third is the Municipal Bureau. The use of personnel in the department is mainly divided into 6 categories, namely administrative personnel, tobacco practitioners, marketing practitioners, logistics practitioners, monopoly practitioners, service personnel, the proportion of various types of personnel in different departments has differences, such as: Municipal Bureau of electronic equipment users in the highest proportion of administrative personnel (76.86%), and A County Bureau and D Municipal Bureau of the highest proportion of personnel types for tobacco practitioners (49.72% and 38.06% The highest type of logistics center was logistics employees (79.82%)(See Fig. 5-B).

The order of the per capita number of equipment in each department from large to small is: Municipal Bureau (11.64), Cigarette Marketing Center (6.69), Tobacco Production and Operation Center (6.10), Logistics Center (5.28), F District Bureau (4.29), E District Bureau (4.06), C County Bureau (3.91), B County Bureau (3.82), WG District Bureau (3.80), A County Bureau (3.45), D Municipal Bureau (2.51), H District Bureau (2.33), I District Bureau (2.11) and J District Bureau (1.19), with an average of 4.48. From the point of view of the difference between the per capita number of equipment and the average value of each department, the per capita equipment of Municipal Bureau, the tobacco production and operation center and the cigarette marketing center are above the average value, and the per capita equipment of the rest of the departments are below the average value(See Fig. 5-C).

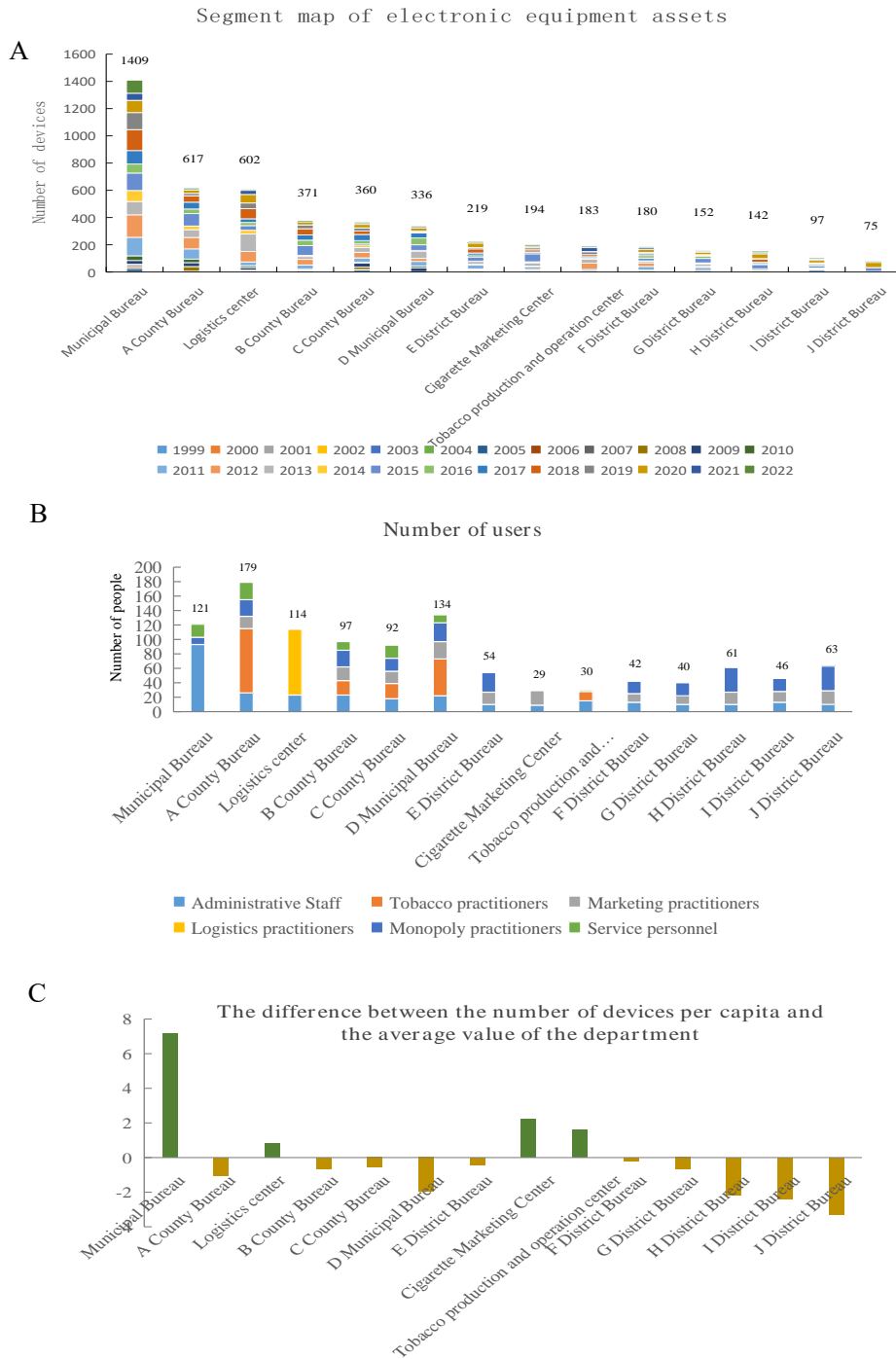
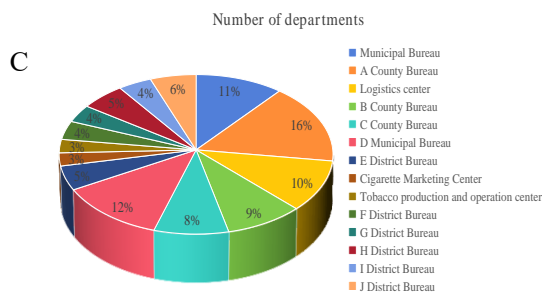
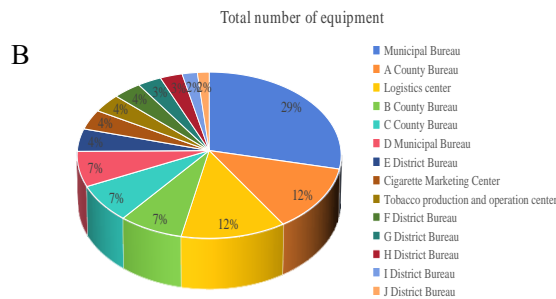
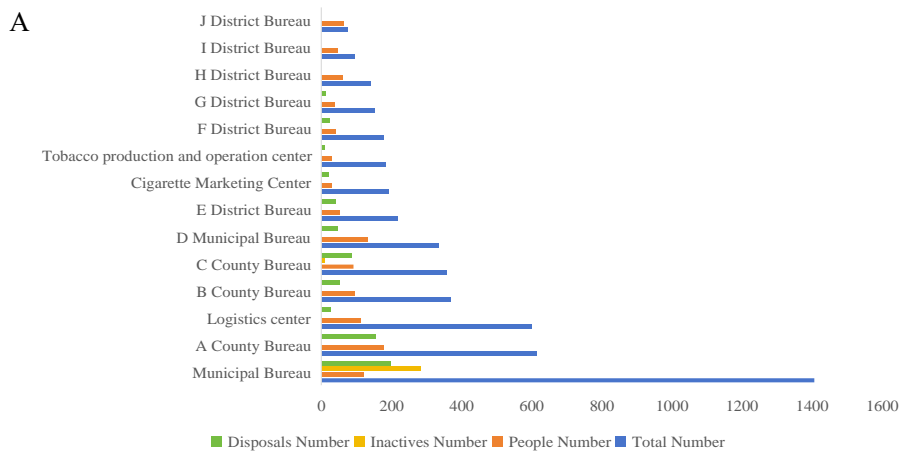


Fig. 5. Distribution of assets and personnel in different departments

4.4.2 Analysis of the proportion of assets in different departments

As can be seen from the figure, Municipal Bureau accounts for the highest number of total equipment, accounting for 29%, the number of departments accounts for the second largest number of people, only 11%, the first is A County Bureau, which is 16%, the idle number of Municipal Bureau accounts for a very high proportion of 96%, 4% is C County Bureau, Municipal Bureau accounts for the highest proportion of 29%, followed by A County Bureau, 23% (See Fig. 6-A/B/C/D/E).



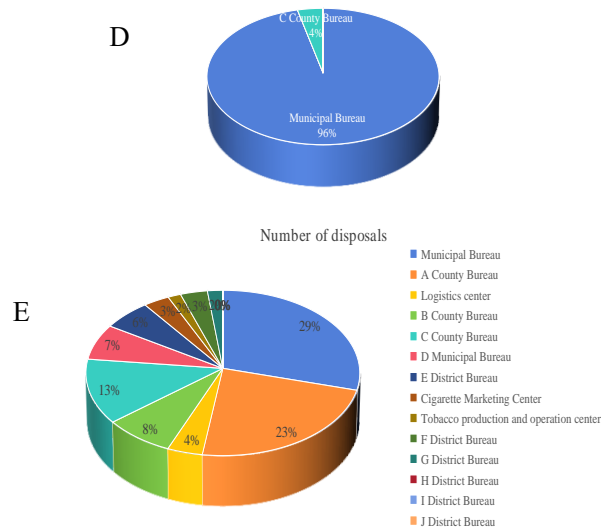


Fig. 6. Analysis chart of the proportion of assets in different departments

4.4.3 Comprehensive analysis of assets of different departments

From the scatter plot of regression analysis, the results of pearson analysis showed that $R = 0.63$, $P = 0.015$ ($P < 0.05$), and there was a linear positive correlation between the number of devices and the number of department(See Fig. 7-A)s. From the perspective of correlation map, there is a positive correlation between the total number of assets (TN), the total number of employees in the department (TP), the number of idle (IN), and the number of disposals (DN). Except for the weak correlation between the total number of employees (TP) and the number of idle employees (IN), the other values showed a significant correlation between the total number of assets (TN) and the total number of employees (TP) ($P < 0.05$), while the number of disposals (DN) was significantly positively correlated with the total number of assets (TN), the total number of employees (TP), the number of idle (IN), and the number of assets (TN) and the number of idle (IN) ($P < 0.01$)(See Fig. 7-B).

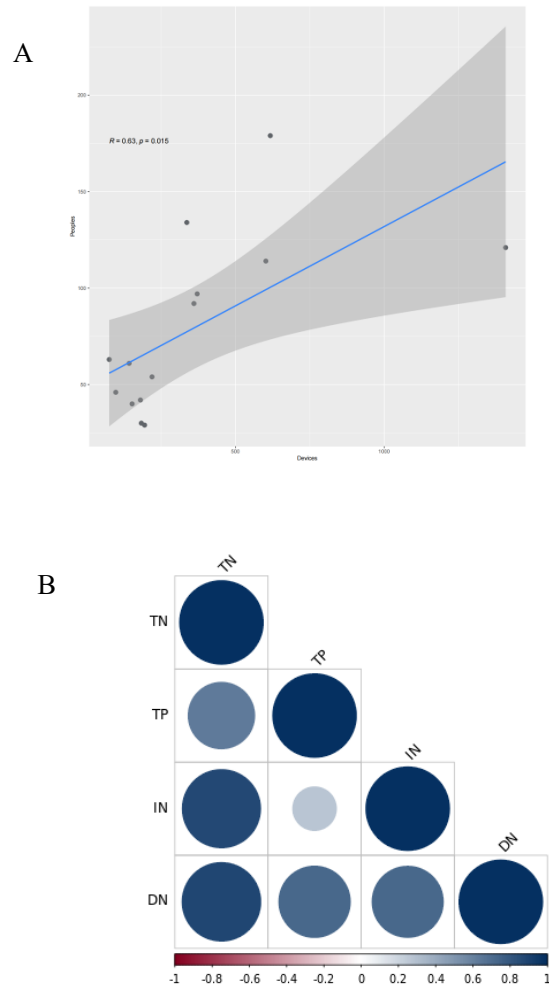


Fig.7. Asset scatter plots and data correlation analysis heat maps of different departments
 Note: In Figure A, the abscissa Devices represents the number of devices, and the ordinate Peoples represents the number of departments.

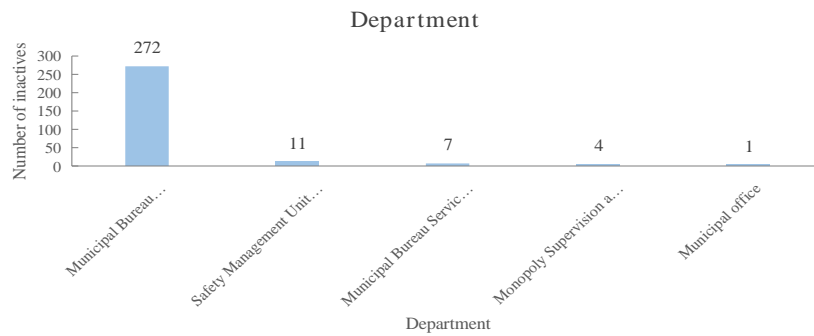
In Figure B, TN represents the total number of assets, the number of TP, the number of IN, and the number of DN disposed.

4.5 Informatization analysis of idle assets

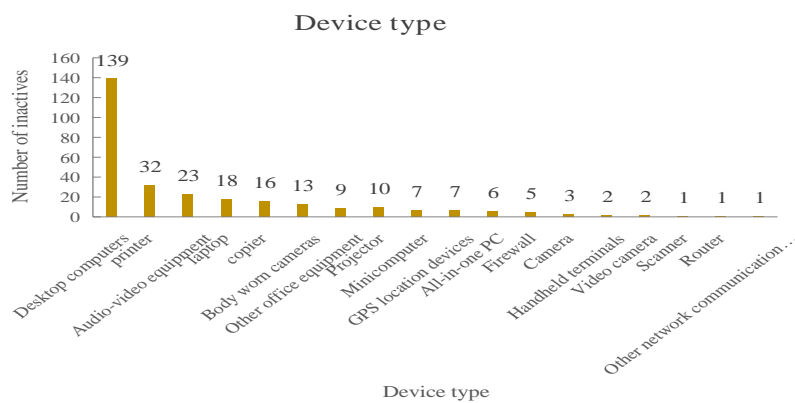
As can be seen from the figure and table(See Fig. 8-A/B/C), the idle equipment is 295 electronic equipment from 2007 to 2021, accounting for 5.98% of the total assets. Department: Municipal Bureau has the largest number of idle assets, totaling 284, accounting for 96.27% of the total idle number, and the secondary departments of Municipal Bureau of idle assets are mostly information centers, with 272 idle numbers, accounting for 92.20% of the total idle number. Among the centers and county/district bureaus, only the safety management unit of C County Bureau has idle assets, with 11 units idle, accounting for 3.73% of the total idle

number. Device type: Desktop computers had the largest number of idle computers, with 139 units, accounting for 47.12% of the total. Year of purchase: The number of idle electronic devices was the highest in 2012 (127 units), followed by 2013 (76 units), and again in 2011 (37 units), and the number of idle electronic devices in 2011-2013 accounted for 81.36% of the total idle amount. The number of idle electronic devices that have not been purchased for more than 5 years is 11, in principle, they can be directly continued to be used or continued to be used after maintenance, which accounts for 3.73% of the total idle number, respectively, 4 law enforcement recorders in 2020, 3 desktop computers in 2018, one integrated computer and one projector in 2018, one printer in 2019 and one audio and video equipment in 2021. There are 116 sets of equipment purchased in the year of 5-10 years, and the equipment in this range is divided into 3 types according to the state of the equipment: can be used directly, continue to be used after maintenance, or should be disposed of, accounting for 39.32% of the total idle number, of which the highest proportion is desktop computers and audio and video equipment in 2013, the number of which is 36 and 15 respectively. The number of idle electronic devices purchased for more than 10 years is 168 units, which should be disposed of in principle, accounting for 56.95% of the total idle number, of which desktop computers in 2012 accounted for the highest proportion of 82 units, accounting for 27.80% of the total idle number.

A



B



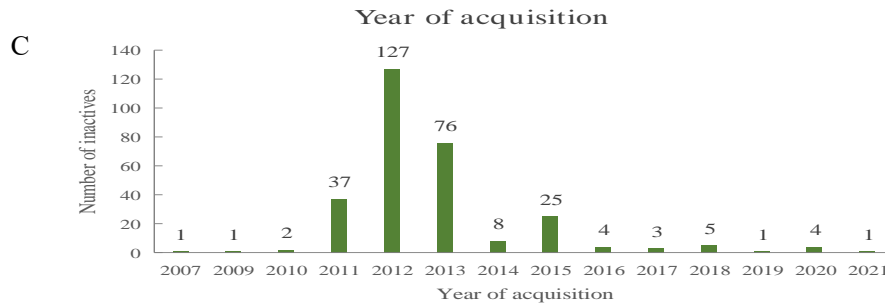


Fig. 8. Informatization analysis of idle assets

4.6 Disposal of assets information analysis

As can be seen from the figure, the disposal equipment is electronic equipment from 1999 to 2014, with a total of 681 disposal equipment, accounting for 14% of the total number of equipment. From 1999 to 2022, there were only 3 equipment disposals, namely in 2018 (disposal of 506 units), 2019 (disposal of 5 units), and 2020 (disposal of 170 units). From the perspective of purchase age, the highest proportion of disposal was the equipment purchased in 2011 (232 units, 34.07%), followed by 2009 (140 units, 20.56%), and again in 2008 (91 units, 13.36%)(See Fig. 9-A).

As of 2014, the cumulative number of equipment was 2,182, and the disposal equipment accounted for 31.21% of the cumulative number of equipment in 2014. Before 2003, the disposal rate was 100%, but 25% of the equipment was not disposed of in 2004, 50% in 2005, 8% in 2006, 25% in 2007, 14.95% in 2008, 10.83% in 2009, 28.83% in 2010, 49.89% in 2011, and the proportion of assets still in use after 2012 was very high, 89.25% in 2012 and 98.04% in 2013 , 99.51% in 2014. From 2004 to 2014, the number of equipment that remained undisposed of was 1,501, the total number of equipment was 4,937, and the total number of equipment in use was 4,256, and the equipment that was not disposed of from 2004 to 2014 accounted for 35.27% of the total equipment in use. That is to say, more than 30% of the electronic equipment currently in use was purchased 8-18 years ago. In the past two years (2021-2022), the number of new devices added is 312, accounting for only 7.33% of the number of devices in use. This shows that the company's electronic equipment is not disposed of in a timely manner and is slow to update(See Fig. 9-B/C).

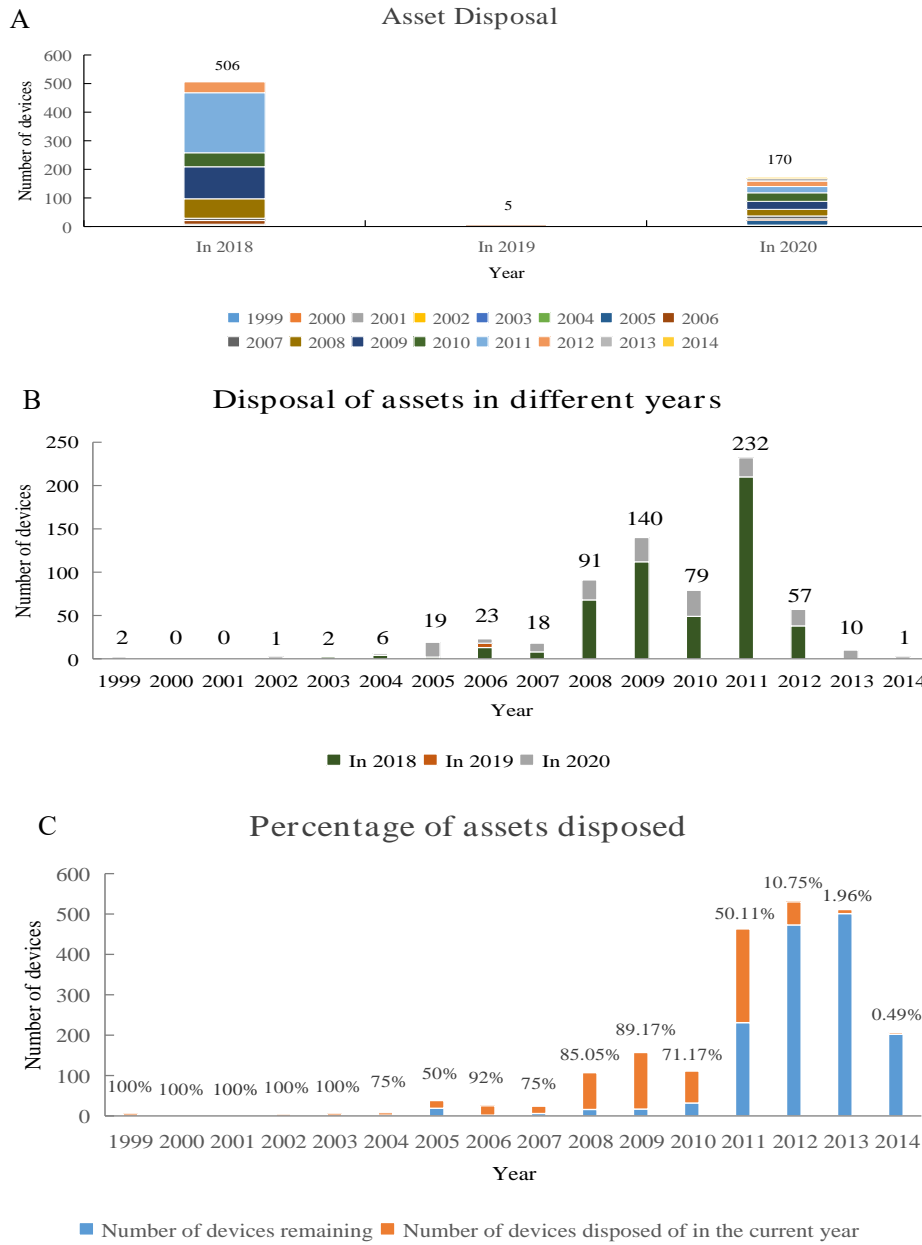


Fig. 9. Informatization analysis of disposed assets

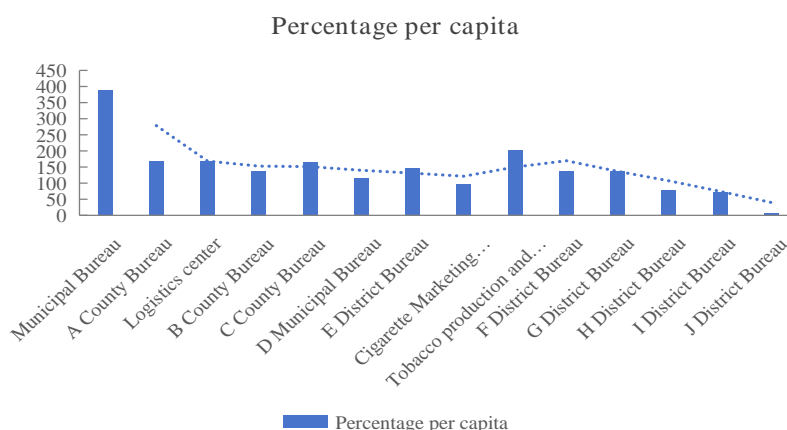
5 Analysis of specific equipment quota standards

The analysis of specific equipment quota standards is based on the top three electronic equipment (desktop computers, laptops, printing and copiers) accounting for the total assets, combined with the company's current quota management standards.

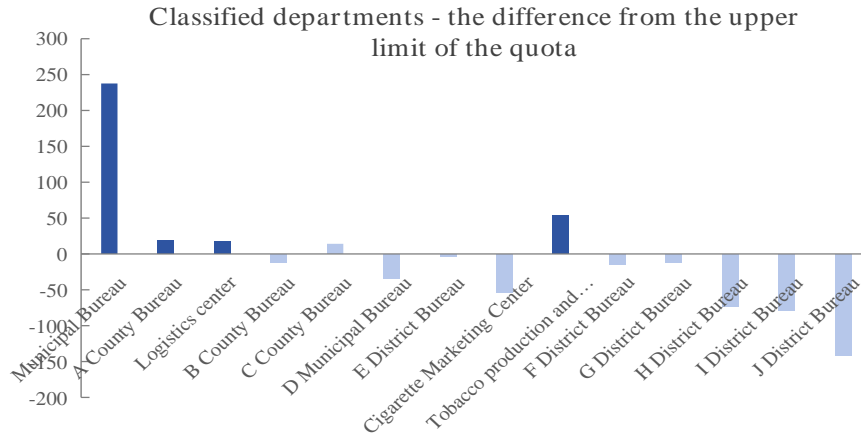
5.1 Desktop computers

Reasonable configuration in combination with the layout of the unit's office network and the provisions of confidentiality management. The upper limit of the number of desktop computers in the classified units of Z Tobacco Company is 150% of the actual number of people in the unit establishment, and the upper limit of the number of desktop computers in the non-classified units is 100% of the actual number of the units in the establishment. According to the standard of secret-related departments, the analysis chart of the difference between the per capita percentage and the upper limit of the quota shows that five departments, including the Municipal Bureau, the A County Bureau, the Logistics Center, the C County Bureau, and the Tobacco Production and Operation Center, have exceeded the upper limit of the quota, and the difference between the per capita percentage and the upper limit of the quota is negative. Among them, the difference between the per capita percentage and the upper limit of the quota is as high as 237.60%, followed by the tobacco production and operation center, which is 53.33%. The department with the smallest difference between the per capita percentage and the upper limit of the quota was J District Bureau (-142.06%), followed by I District Bureau (-78.26%) and H District Bureau (-72.95%). According to the standard of non-classified departments, except for four departments, including the cigarette marketing center, the H District Bureau, the I District Bureau, and the J District Bureau, the rest of the departments have exceeded the upper limit of the quota. The Municipal Bureau exceeded the rated upper limit by 287.60%, and the 14 departments exceeded the rated upper limit by an average of 60.44%. The per capita number of equipment is 1.60, and the average percentage difference between the upper limit of the quota of secret-related departments is 10.44%, and the average percentage of difference between the upper limit of the quota of non-secret-related departments is 60.44%. Overall, the number of desktop computers currently available is basically above the departmental quota (See Fig. 10-A/B/C).

A



B



C

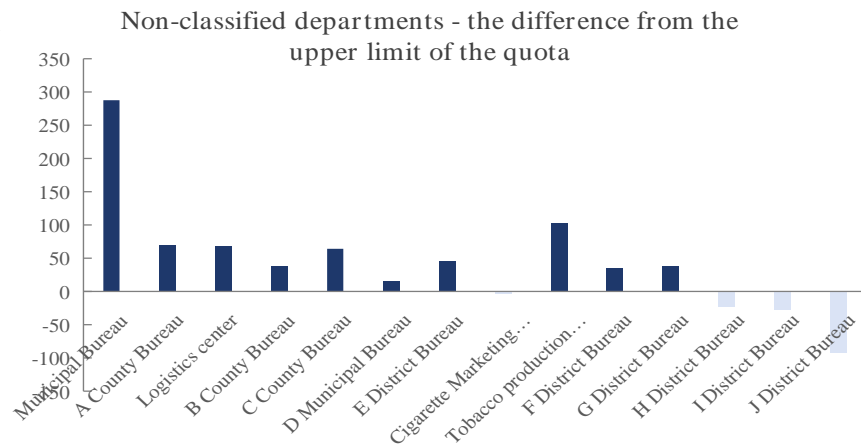


Fig. 10. Desktop computer quota standard analysis chart

5.2 Laptops

The maximum number of laptops is 50% of the actual number of people in the unit. Field units may increase the number of laptops while reducing the number of desktop computers, as appropriate. The analysis chart of the difference between the per capita percentage and the upper limit of the quota shows that except for the three departments of Municipal Bureau, Cigarette Marketing Center, and Tobacco Production and Operation Center, which all exceeded the upper limit of the quota, the difference between the rest of the departments was negative. The number of devices per capita was 0.2677, and the average percentage difference was -23.23%. Overall, the number of laptops currently available is within the departmental quota(See Fig. 11-A/B).

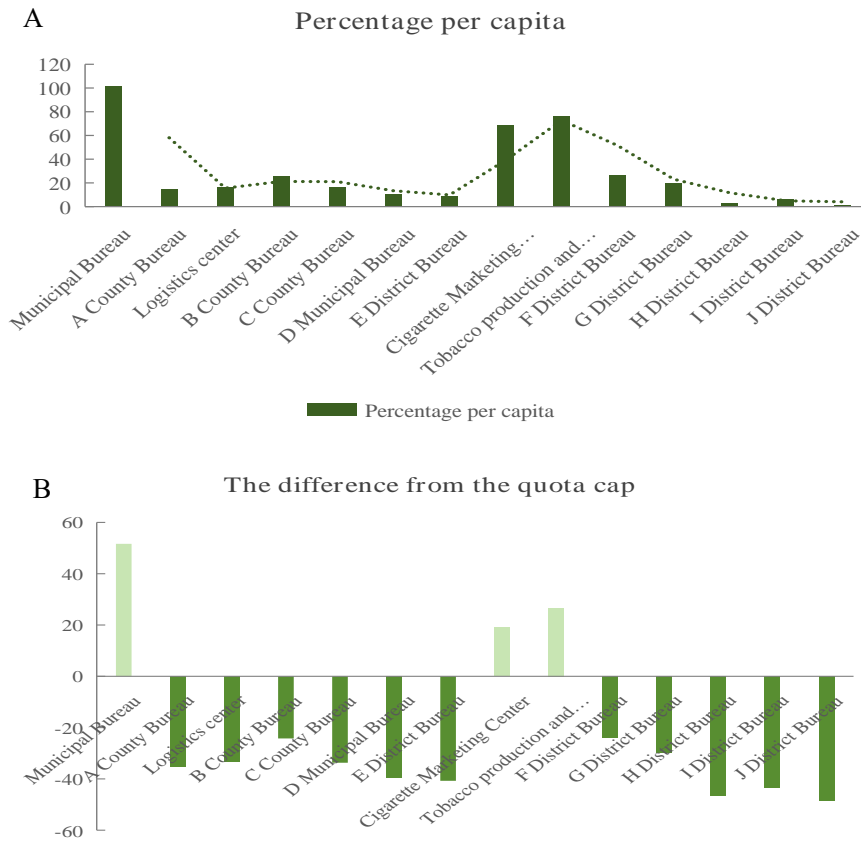


Fig. 11. Standard analysis of laptop quotas

5.3 Dozen/Copier

The upper limit of the number of A3 and A4 beating/copying machines in the unit is calculated according to 80% of the actual number of people in the establishment of the unit, and the unit chooses to configure A3 or A4 beating/copying machines according to the needs of the work. The analysis chart of the difference between the per capita percentage and the upper limit of the quota shows that except for two departments, including the Municipal Bureau and the B County Bureau, which have exceeded the upper limit of the quota, the rest of the departments are negative. The difference between WG District Bureau, H District Bureau, I District Bureau, and J District Bureau and the upper limit of the quota increased to the negative pole (-75.24%). The number of devices per capita was 0.6652, and the average percentage difference was -13.48%. Overall, the number of printers/copiers currently available is within the departmental quota(See Fig. 12-A/B).

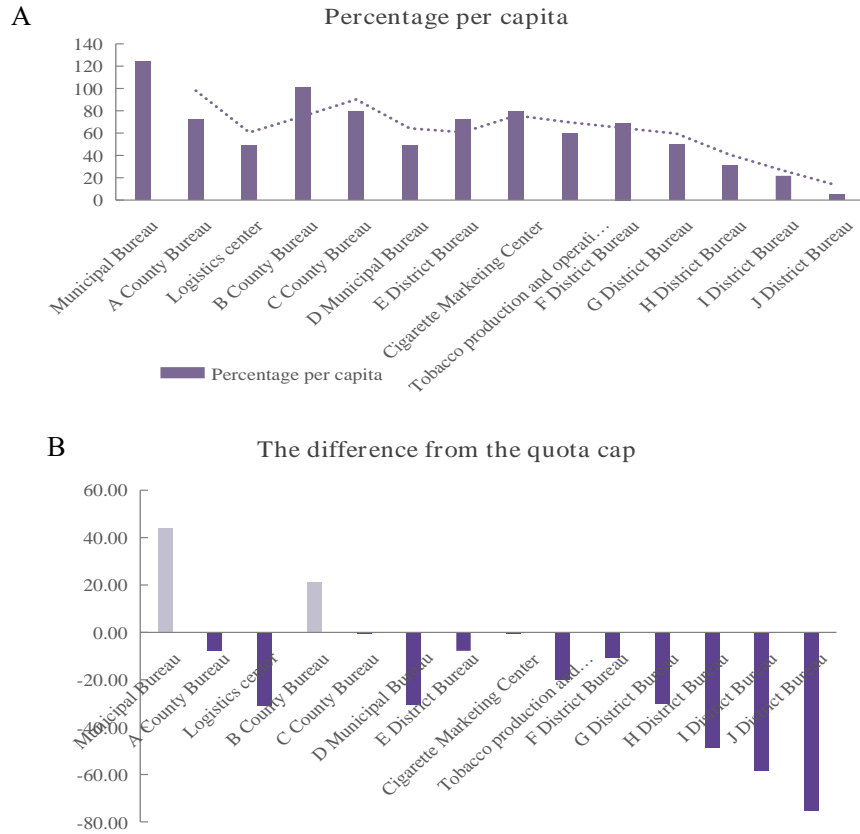


Fig. 12. Standard analysis diagram of dozen/copier quota

6 Visual analysis of asset acquisition and disposal

Based on the above analysis results of asset allocation in different departments and specific equipment quota standards, taking the department with the smallest (or largest) per capita equipment number and the largest negative (or positive) value difference between the upper limit of the quota as an example, referring to the research and design of the multi-dimensional evaluation model of the purchase and disposal of fixed assets of Du Shuang tobacco system^[13], the purchase and disposal of desktop computers were taken as the research object for visual analysis.

6.1 Visual analysis of asset acquisition

The visual analysis of asset acquisition is judged from five dimensions, namely: (1) rationality dimension: the rationality dimension is used to judge whether the purchase is reasonable, and the evaluation is carried out by comparing the number of employees in the application department with the number of equipment currently existing in the department. In principle, the number of employees should match the number of assets, taking into account the balance

between idle waste and work efficiency. If the number of existing assets of the applicant department has exceeded the number of employees in the department, then there is an asset redundancy, and the score of this dimension should be reduced in the quantitative score (see Equation 1). (2) Necessity dimension: This dimension is used to judge the necessity of the acquisition application, if the fixed assets to be purchased are idle in the company, the application is not necessary, so the score of this dimension should be reduced in the quantitative score (see Equation 2). (3) Cost dimension: The cost dimension is used to judge whether the price of the planned purchase of fixed assets is appropriate, if the unit price of the purchased assets is higher than the average price of similar assets in the past, it is considered that the acquisition cost is higher, and the feedback score will decrease with the difference between the higher price, and remind the decision-maker that the purchase has been higher than the average value, and carefully consider whether the price is within an acceptable range when applying for the purchase (see Formula 3). (4) Renewal dimension: With the growth of the service life of fixed assets, the loss and depreciation of fixed assets are inevitable. The update dimension considers whether the purchase is reasonable based on the frequency of renewal requests made by the department. Consider the repetition and frequency of acquisition applications, evaluate this dimension to reduce the score according to the frequency of updates, and feedback a suggestion to remind decision-makers that there may be anomalies in the frequent filing of acquisition applications by this department (see Equation 4). (5) Acquisition dimension: When purchasing assets, if the number of similar assets is planned to be purchased, it will increase the risk of idle impairment and maintenance costs in the later stage. Therefore, the model believes that it is irrational to purchase too many fixed assets at a time, so it sets a certain value when evaluating this dimension, and if the purchase plan exceeds the set value, the model will reduce the score of this dimension (see Equation 5). Calculate the total score: Compare the total score with the pre-set critical threshold value to see which interval is in which interval each interval has a specific suggestion to feedback to the decision-maker, for example, when the necessity dimension score is low, the decision-maker will be reminded that there are currently idle devices, and when the rationality dimension score is low, a reminder that the number of devices has exceeded the number of users will be fed back (see Equation 6).

According to the analysis results of the asset allocation of different departments and the specific equipment quota standards, the per capita equipment number of J District Bureau is the smallest, and the difference between the upper limit of the quota is the largest. Taking the purchase of desktop computers by J District Bureau (2023) as an example, the visual analysis of asset acquisition evaluation was carried out, and the total score was 460.0 points through 5-dimensional value evaluation, and the evaluation suggestions were: recommended purchase, and the number of purchases was determined by combining specific work needs and actual factors of personnel transfer(See Fig. 13 and Tab. 1).

Visual analysis of purchase evaluation

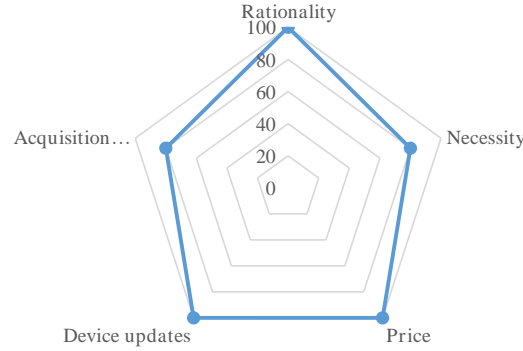


Fig. 13. Visual analysis of purchase evaluation

Tab. 1. Visual analysis of purchase evaluation

Name	Scores	Suggestion	Calculation formula
Plausibility dimension	100.0	There is currently no idle equipment to replace	$P_1=A-N*X, \min(P_1)=A/2$ (1) P ₁ is the score obtained for this dimension, A is the total score of the dimension, N is the number of idle assets of the same type, and X is the weight of idle fixed assets.
Necessity dimension	80.0	Since the number of applicants is greater than the number of facilities, there is no redundancy of assets, and new equipment is necessary	$P_2=X*(N-M), \max(P_2)=A, \min(P_2)=A/2$ (2) P ₂ is the score obtained by this dimension, A is the total score of the dimension, N is the number of people in the department, and M is the number of existing assets in this department.
Cost dimension	100.0	The price of the equipment applied for is lower than average, and the cost of purchase is relatively low	$P_3=B+(X-Y)/Z, \min(P_3)=A$ (3) P ₃ is the score obtained for this, A is the total score of the dimension, B is the predetermined base value of the score, X is the average price, Y is the unit price, and Z is the proportional weight.
Update dimensions	100.0	The department has not made the same application in a year, and this application may be considered as a necessary renewal request	$P_4=B+(t_1-t_2)*X, \max(P_4)=A$ (4) Where P ₄ is the score obtained for this dimension, A is the total score of the dimension, t ₁ = current time, t ₂ = last application update time, and X is the weight per unit time.
Acquisition dimension	80.0	The sector has a scarcity of related assets and it is proposed to expand its resources	$P_5=A-X*N, \min(P_5)=A/3$ (5) P ₅ is the score obtained by this dimension, A is the total score of the dimension, N is the quantity purchased, and X is the quantity weight.
Total score	460.0	Recommended purchases, the number of purchases is determined by combining specific work needs, personnel growth and actual factors of transfer	$P=P_1+P_2+P_3+P_4+P_5$ (6)

6.2 Visual analysis of asset disposal

The asset disposal evaluation also evaluates whether it is suitable for disposal and scrapping from five dimensions. (1) Existing value dimension: This dimension is used to

evaluate the existing value of an asset, and determine the existing value of an asset based on its original value, net residual value, and monthly depreciation amount (see Formula 7). (2) Asset life dimension: The remaining life of fixed assets is often related to the value of assets, work efficiency, etc., and this dimension is used to evaluate the remaining life of assets (see Equation 8). (3) Asset maintenance dimension: assets need regular maintenance in their life cycles, and the level of their maintenance costs determines whether assets should be scrapped in time. If an asset requires expensive maintenance expenditures, and continuing to use the asset will result in a loss of income, it should be disposed of and scrapped in a timely manner and a new asset should be purchased in a timely manner. This dimension is used to describe the maintenance expenditure of an asset and to give decision makers an idea of the maintenance cost of the asset (see Equation 9). (4) Asset performance dimension: When considering the disposal of fixed assets, its performance is an important consideration, and its performance directly determines its efficiency. This dimension is used to describe the performance of the asset, to help the decision-maker understand how the asset is performing, and to judge whether it is up to the task, in the case of a computer, its performance is affected by CPU, memory, hard disk, etc. (see Equation 10). (5) Frequency of use: The frequency of use of an asset is an indicator to evaluate the importance of an asset, if an asset is frequently used, the model considers that the asset is in an important working position, and can be disposed of preferentially when the asset is disposed of. This, combined with the asset acquisition model, allows for timely and prioritized updates of equipment in critical locations and increases productivity (see Equation 11). The total score is calculated (see Equation 12).

According to the analysis results of asset allocation and specific equipment quota standards of different departments, the per capita number of equipment of Municipal Bureau is the largest, and the difference between the upper limit of the quota is the largest. Taking the disposal of the desktop computer of Municipal Bureau (2012) as an example, the visual analysis of asset disposal evaluation was carried out, and the total score was 190.0 points through the 5-dimensional value evaluation, and the evaluation suggestion was: the asset can no longer meet the current work needs, and it is recommended to dispose of it, and the specific situation can be further combined with the specific status of the asset to make decisions.

Asset disposal evaluation also evaluates whether it is suitable for disposal and scrapping from five dimensions, namely existing value, asset life, asset maintenance, asset performance and frequency of use. (1) Existing value dimension: This dimension is used to evaluate the current value of an asset, and determine the current value of the asset according to the original value, net residual value, and monthly depreciation of the asset. (2) Fixed asset life dimension: The remaining life of fixed assets is often associated with the value of the asset, the efficiency of the next operation, etc., and this dimension is used to evaluate the remaining life of the asset. (3) Fixed asset maintenance dimension: In the life cycle of assets, regular maintenance is required, and the level of maintenance costs determines whether the assets should be scrapped in time. If an asset requires expensive maintenance expenses such that continued use of the asset would result in a loss of revenue, the scrapped asset should be disposed of in a timely manner and a new asset should be purchased in a timely manner. This dimension is used to describe the maintenance expenditure of an asset and to make decision makers aware of the maintenance cost of the

asset. (4) Asset performance dimension: When considering the disposal of fixed assets, its performance is an important consideration, and performance directly determines its next efficiency. This dimension is used to describe asset performance, help decision-makers understand how the asset is performing, and determine whether it can be qualified for the current next job, taking computers as an example, its performance is affected by CPU, memory, hard disk, etc. (5) Frequency of use dimension: The frequency of use of assets is an indicator to assess the importance of assets, if an asset is frequently used, the model believes that this asset is located in an important working position, in the disposal of assets, can be prioritized disposal. This, combined with the asset acquisition model, enables timely and prioritized updates of equipment located in important work locations, improving throughput throughout the workflow and resolving bottlenecks(See Fig. 14 and Tab. 2).

Visual analysis of dispose evaluation

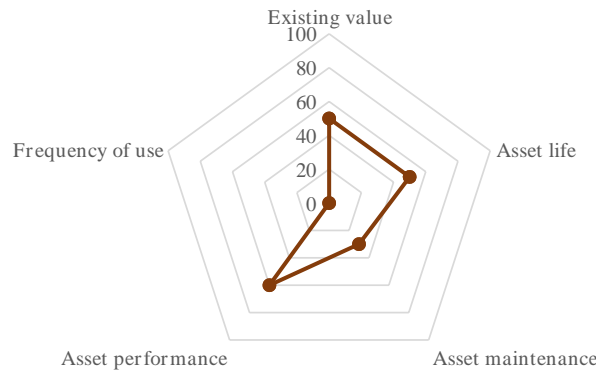


Fig. 14. Visual analysis of dispose evaluation

Tab. 2. Visual analysis of dispose evaluation

Name	Scores	Suggestion	Calculation formula
Existing value dimension	50.0	The residual value of the asset is less than 50%.	$D_1=A-B-T*X$ (7) D ₁ is the score obtained for this dimension, A is the original value of the asset, B is the net residual value of the asset, T is the used month, and X is the monthly depreciation.
Asset life dimension	50.0	The remaining life of the asset is below 50%, and the performance is significantly reduced	$D_2=A*(1-\Delta t/T)$ (8) Among them, D ₂ is the score obtained for this dimension, A is the total score of the dimension, Δt = current time - time in use, and T is the asset life.
Asset maintenance dimensions	30.0	The asset has a > maintenance cost of 20% and a higher profit loss	$D_3=A(1-F(x))(1+Z(n))$, $\max(D_3)=A$ (9) Where A is the total dimension score, x is the time that the device has been used, and n is the total number of devices of

Asset performance score	60.0	The initial price of the asset is below \$4,000, and the initial performance is average	<p>the same type. F and Z are weighting functions that vary depending on the specific asset.</p> $D_4 = \sum_1^n f(n)Z(n) \quad (10)$ <p>Where D₄ is the score obtained for this dimension, n is the functional component of the asset, f is the performance function of each component, and Z is the weight function of each component in the total performance.</p>
Use the frequency dimension	0.0	The asset is used less frequently and is almost idle	$D_5 = A * [t_1 / (t_1 + t_2)] \quad (11)$ <p>D₅ is the score obtained for this dimension, A is the total score of the dimension, t₁ is the working time, and t₂ is the idle time.</p>
Total score	190.0	Theoretically, this asset can no longer meet the current work needs, and it is recommended to dispose of it, and the specific situation can be further combined with the specific status of the asset to make decisions	$D = D_1 + D_2 + D_3 + D_4 + D_5 \quad (12)$

7 Conclusion

This paper focuses on the "five more and two less problems" existing in the asset management of Z Tobacco business (five more: more assets, more types, more in use, more waste and depreciation, more process requirements; two less: less monitoring and traceability means, less management process), and systematically investigates the current situation of Z Tobacco's electronic equipment assets (including categories, status, uses, pain points, etc.), and conducts information management of electronic equipment assets, equipment quota standards, and visual analysis of asset purchase and disposal. The conclusion of the study is that the proportion of electronic equipment assets in company Z is in line with the normalized needs of electronic office equipment, but the company's old equipment is too redundant, so it is necessary to strengthen the timely disposal of old equipment and the regular update of new equipment, and at the same time improve the asset quota management, revitalize idle assets, improve the effective utilization of assets, and strengthen the effective allocation and supervision of assets among departments. Finally, through the quantitative analysis of the purchase and disposal of electronic equipment assets of Z Tobacco Company, this paper proposes two decision-making models, taking two departments as examples, and expounds the specific practical significance and implementation methods of the models from five dimensions, so as to provide better decision-making basis and standards for the company, and the research results can provide theoretical support and technical support for the upgrading and construction of the tobacco commercial asset management system platform.

From the point of view of the state of assets, idle assets still occupy a certain proportion, there are two ways to reduce the proportion of idle assets, the first is to analyze the reasons for

idleness, whether it is due to unreasonable allocation or unreasonable use, if it is unreasonable allocation, the review of the plan link should be further strengthened, to avoid the purchase of unnecessary assets, to save the waste of funds; if it is because of unreasonable use, the effective circulation of asset information should be strengthened, to ensure the matching of users and assets, and to make full and reasonable use of them. From the perspective of management methods, less than 20% of the assets included in the quota management are too low, and the proportion of assets included in the quota management should be strengthened to promote the precise management and information management of assets. The fluctuation of the total number of new electronic equipment assets may be related to the renewal cycle of the equipment. The renewal cycle is related to the purchase life of assets, operation and maintenance costs, obsolescence and disposal, personnel changes, and development needs^[14,15].

Based on the quantitative analysis of the acquisition and disposal of electronic equipment assets of Z Tobacco, this paper proposes two decision-making models of asset acquisition and asset disposal, and expounds the specific practical significance and how to realize the two models from various dimensions. The results show that these two models can help enterprises make better decisions, control the import and export of fixed assets, and allow decision-makers to more accurately judge whether to purchase new assets and dispose of old assets in a timely manner. The model has good practical significance, helping enterprise managers to find the shortcomings of fixed asset allocation in time, improve the work efficiency of enterprises, prevent unreasonable asset purchases, and reduce the waste of funds in fixed asset allocation^[16-17].

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References

- [1] LOMBARDO C. Fixed Assets: Seeking the Unknown [J]. Accounting Technology, 2005.
- [2] HE Xuefeng, CHEN Jingli, ZHANG Xin. A Case Study of Operational Costing Method Based on Artificial Intelligence, Big Data and Cloud Computing [J]. Finance and Accounting Monthly, 2018, (17): 69-72.
- [3] Pi Zhenlin. Analysis of the problems and countermeasures of fixed asset management of state-owned enterprises [J]. Shanxi Youth, 2017 (11).
- [4] Tianjin Municipal Bureau of Finance, He Zhiqiang, Luo Xinyong, Countermeasures and Suggestions for Further Strengthening the Management of Fixed Assets of Administrative Institutions, Tianjin Economy, 2017(2): 33-7.
- [5] Yun Yuzhen. Application of ERP system in fixed asset management [J]. China Chief Accountant, 2017(12): 38-40.
- [6] Xi Wenyan. Research on fixed asset management problems and countermeasures of Luoyang tobacco company [D]. Wuhan: Zhongnan University of Economics and Law, 2019.

- [7] Liu Baiqing. Discussion on the whole life cycle asset management model of tobacco enterprises[J]. Management and Technology of Small and Medium-sized Enterprises(Late Edition), 2020(12): 21-22.
- [8] Chen Xiacong. Research on internal control of enterprise fixed assets based on risk management[D]. Qingdao : Qingdao University of Science and Technology,2017.
- [9] Jiechengru, Luo Yan.Thoughts on the whole process management of fixed assets of tobacco commercial enterprises[[J].Modern Economic Information,2016,(20) :266.
- [10] Su Meiwei, Hu Linghui. Discussion on the problems and countermeasures of fixed asset management of tobacco and tobacco enterprises[J]. Finance and Accounting Learning, 2017, (6):169-173.
- [11]SUN Qian. Discussion on the strategy of asset management optimization of tobacco enterprise quota standard[J]. Enterprise Reform and Management,2020, (19):175-176.
- [12] FENG Jingmin. Research on the life cycle cost management of fixed assets: A case study of G tobacco company[D]. Guangzhou: Guangdong University of Finance and Economics, 2023.
- [13] Du Shuang, Zhao Qiu Mei. Research and design of multi-dimensional evaluation model for the purchase and disposal of fixed assets in tobacco system[J].Fortune Today, 2022, (05): 61-63.
- [14]Guilin Zou, Yan Huang, Wen Chen, Liangzheng Wu,Shangyong Wen. Life-cycle cost model and evaluation system for power grid assets based on fuzzy membership degree[J]. Global Energy Interconnection, 2021, 4(04): 434-440.
- [15]Luay N. D waikat, Kherun N. Ali. Green buildings life cycle cost analysis and life cycle budget development: Practical applications[J].Journal of Building Engineering,2018,18.
- [16] Cheng Ping, Han Jiayi.Enterprise fixed asset investment decision-making based on cloud accounting in the era of big data[J].Friends of Accounting,2015(04):128-131.
- [17] Liu Jie.Enterprise Fixed Assets Accounting and Management, Modern Business, 2017(20): 136-7.