

# Value Analysis for Xingcheng Department Store

Dong Yazhen

Qingtian Agriculture Bank, Qingtian County,  
Zhejiang Province, 323900, China

Ma Qingguo

Management College, Zhejiang University, Hangzhou, 310027, China  
mqg@sba.zju.edu.cn



Dong Yazhen, the accountant of Qingtian Agriculture Bank, Graduated from Zhejiang University in 1989.

Prof. Q. Ma is the president of Preparing Committee of Society of Chinese Value Engineering, the Vice Dean of Management School at Zhejiang University, Editor, *R&D Management*, Editor, *Value Engineering*

## ABSTRACT

It is a general problem in China that parts of the shop counters in a department store are busy, others are idle. How to determine the number of salesclerks of each shop counter, and, at the same time, to reduce the cost of labor force? This paper suggests a method to determine the reasonable number of salesclerks of each shop counter based on the Basic Point Method in VE (Referring the Proceedings of SAVE International Conference, 1983), and studies a case, Value Analysis for the counters system of Xingcheng department store. As the result, it saves more than RMB 2 million in the past 2 years just in the deflation period of Chinese Business Cycle.

Keywords: Value analysis, Shop Counters System, Size of Employment of Salesclerk

Xingcheng Department Store is located at the flourishing district of satellite-city of Beijing at Daxing County. It was built in March 1993, and started business formally in December 1994. It is a seven-storey building, whose floorage is 30471 m<sup>2</sup>. Its total investment is RMB 110 million. Now, Xingcheng is a modern shopping center with the biggest scale and the fullest functions in the suburb of Beijing. The shop counters system engages in selling commodities directly. The counters system of Xingcheng is established according to the broad classification of commodity. Now the system includes 50 counters, whose sale field covers 50 thousand kinds of commodities. We compare the profit of four department stores in the following. (The original data comes from the annual reports of four department stores in 1995.)

## INTRIDUCTION

Department store	Gross profit rate	Net income ratio	Rate of asset return	Rate of profit break-even cost
Wang Fu-jing (in Beijing)	16.04	5.20	6.77	7.09
Hangzhou Bai-da	15.73	6.05	8.11	6.48
Hangzhou Jie-bai	14.69	6.42	11.99	7.68
Xingcheng	17.02	0.18	0.37	0.18

From above data, we can see that though the gross profit rate of Xingcheng is 0.98%~2.33% higher than the other three companies, but its net income ratio, rate of asset return and rate of break-even cost profit are far lower than the other three ones. It

shows that the expenditures of Xingcheng are relative much higher. By analyzing its cost structure, we see that 52% of total expenditure was of staff wages and welfare. In 1995, total expenditure of Xingcheng was 20890 thousand yuan, staff wages and welfare

expenditure was 10840 thousand yuan). The wages and welfare expenditure of the shop counter salesclerks was 7228 thousand yuan, reached 34.6% of total expenditure. Therefore, the size of staffs, especially the size of staffs in the shop counter system is terribly redundant, which leads to the low profit level in Xingcheng department store. If the size of staffs is reduced effectively, the profit can be raised directly. Through further investigation, we found that the allocation of salesclerk wasn't reasonable, which resulted in the salesclerks of some counters were busy, others were idle. If the department store adjusts and allocates salesclerk among counters reasonably, the enthusiasm of the salesclerk can be promoted, and the quality of service can be improved also. In the following we will study the size of employment of salesclerk in different counters of Xingcheng Department store by using value analysis.

#### FUNCTION ANALYSIS AND FUNCTION QUANTITY DETERMINATION FOR SHOP COUNTERS

By analyzing the sale activities, we see that the common functions of shop counters are (1) attracting customers; (2) introducing commodities (answering customer's question, directing customers to buy commodities); (3) selling commodities (Helping customer select commodities, invoicing, package, seeing off customers politely). Among the three functions, attracting customers is associated with the exhibition and display of commodities, which are weakly correlative to the number of salesclerks of each counter. So we don't take this function into account in this paper. And the functions of introducing commodities and selling commodities are highly correlative to the size of staffs in counters. We focus on the study of the function quantity of other two functions when evaluating function quantity of each counter.

By investigating counters, we found that the counters of different commodities were different in the proportion of average per successful transaction and the frequency of the customer's asking.

We define:

*Average time per transaction (minute) = Average time per sale (minute) + Average number of asking per successful transaction × Average time per asking (minute)*

Therefore, the function quantity of each

counter is the product of transaction number in one day and average time per transaction. For the transaction number is different in the holiday and the busy season and off-season, the function quantity of each counter is the product of the weighted average of transaction number in one day and the average time per transaction. Because of the equal interval about sixty days of busy season and off-season, we can use the following formula to calculate the weighted average number of daily transaction:

*Weighted average number of daily transaction = (average number of daily transaction in busy season + 4 × general average number of daily transaction + average number of daily transaction in off season) ÷ 6*

During the process of surveying the sale of each counter in Xingcheng, we obtain the summary result through the synthetic analysis both transaction data in computer and direct questionnaire to each counter, and calculate the assessment quantity of each counter function, shown as table 1.

$$V = \sum_{i=1}^{13} K_i / 13 = 184.67$$

#### FUNCTION-COST ANALYSIS AND DETERMINATION OF EMPLOYMENT SIZE FOR EACH COUNTER

The cost to achieve the function of each counter in the shop counter system is composed of salesclerk wages and welfare expenditures. Therefore, we can take the number of salesclerks in each counter to measure the cost. The basic procedure to determine the employment size of salesclerk by using VA is firstly to evaluate the function quantity of each shop counter, then to compare it with standard value coefficient, finally to determine the due cost to achieve function. Thus, the key of determining the employment size of a shop counter is how to determine the standard value coefficient, and to compare it with the function quantity of each counter, so we can obtain the due number of salesclerks of each counter.

We apply the Basic Point Coefficient Method to calculate the standard value coefficient of each shop counter. The process is, firstly, to calculate the existing function quantity per capita of each shop counter (shown as table 1); secondly, to select about a quarter of counters whose function quantity

per capita are larger as the basic counters; then to take the average of these function quantity per capita as average advance level, that is to say, the standard value coefficient of the shop counter system. The calculate process in detail as following:

From the ninth column in table 1, select 13 counters with the bigger function quantity per capita.

From the eighth column in table 1, add up to  $K_i$ , the function quantity per capita of these 13 counters, and divided by 13, so get the standard value coefficient, written as  $V$ :

Thus we can calculate and determine the standard salesclerk number  $N_i$  of each counter by the following formula:

*Standard salesclerk number  $N_i$  of each counter = each counter function quantity  $F_i \div$  standard value coefficient  $V$*

The result is shown as table 2.

For the following actual facts, we should make considerable adjustment of the standard salesclerk number  $N_i$  of each counter in table 2.

(1) The standard salesclerk number  $N_i$  of each counter must be three at least, so that when one is day off by turns, the two others could be at work by turns. Furthermore, the counters with the reasonable salesclerk number are tool, needle, travel, children's clothing, sandal, children's shoes, trousers, woolen textile, woman's clothing, cistern and so on. Three salesclerks are needed for these counters.

(2) The function of motorbike counter ( $F_i$ ) is limited, and can be incorporated into the bike counter.

(3) The transaction quantity of such counters as trousers, dress, sandal, travel articles is not large, but the flow of customers is large and the none-trade service time is long. Thus, in practice, each of these counters should add one to three salesclerks.

4 The number of salesclerks should be integer, so the standard number of salesclerks should be rounded off.

The final reasonable employment size of salesclerks is shown in table 2 column 4, and the change of salesclerk number is shown in column 5.

## RESULT

VA is the useful method to improve the organization structure and its staff size of an enterprise. But the real effects depend on whether or not the high leaders of the enterprise pay attention to it and take part in it actively.

In this research process, everything from the precise collection of basic data to carrying out the achievement was finished with the cooperation of the leaders of Xingcheng Department store. From the operation result, the reasonable re-define of the shop counter system not only solves the problem that parts of counters are busy, others are idle, but also reduces the size of employment and thus the profit goes high. If the wage and welfare of each salesclerk is RMB 10,000 per year, reduce the size of employment by 228 can save the expenditure of Xingcheng Department store by RMB 2.28 million.

## REFERENCE

Ma Qingguo, Same New Methods in Value Engineering, Proceedings of SAVE International Conference, 1983

Table 1. Transaction times, time and function quantification of each counter

Floor	Counter	Average daily transaction times				average time per transaction	Each counter			
		busy season	comm on season	off season	weighted average		$F_i = \times$	initial number of salesclerks	per capita function $K_i = \div$	sort by $K_i$
First floor	Beauty treatment	1500	1000	600	1017	2	2034	11	184.91	4
	Cigarette & wine	1500	600	400	717	3	2151	13	165.46	6
	Candy	1100	600	400	650	3	1950	14	139.29	9
	Electric appliance	70	150	55	121	5	605	9	67.22	29
	Bike	15	100	30	80	10	800	11	72.73	26
	Motorbike	700	10	8	11	15	165	8	20.63	47
	Quick freezing	500	450	300	467	1.5	701	13	35.92	41

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	Body builder	450	250	200	283	3	849	10	84.9	23
	Labor goods	20	120	80	97	10	970	7	138.57	11
	Tea	500	270	150	288	2	576	6	96	17
	Tool	20	60	40	50	5	250	7	35.71	42
	Household appliance	25	15	10	17	30	510	10	51	34
	Dried fruit	800	420	300	463	3	1389	10	138.9	10
	Washing	400	300	200	300	3	900	11	81.82	25
	Grocery	1200	1000	800	1000	5	5000	12	416.67	1
	Boiled foods	2000	600	300	783	5	3915	13	261	2
	Cake	2000	500	400	733	3	2199	12	183.25	5
	Small household appliance	50	30	25	33	20	660	10	66	30
2 <sup>nd</sup> floor	Articles by woman	220	170	130	172	3	516	6	86	21
	Underwear	390	230	180	248	5	1240	9	137.78	12
	Stationery	260	600	200	477	1.5	716	10	71.55	28
	Traveling goods	110	70	50	73	2	146	8	18.25	48
	Small needle	200	165	120	163	1.5	245	10	24.45	45
	Rubber articles	330	250	160	248	2	496	10	49.6	35
	Sandal	110	50	40	58	5	290	12	24.17	46
	Toy	500	300	80	297	4	1188	12	99	16
	Children's shoes	162	146	103	142	3	426	9	47.33	36
	Children's clothing	90	45	30	50	5	250	15	16.67	49
	Aluminum product	275	135	105	153	5	765	18	42.5	38
	books	500	650	250	558	2	1116	12	93	19
Third floor	Man's clothing	30	20	20	22	40	880	15	58.67	33
	Trousers	30	15	12	17	15	255	9	28.33	43
	Cotton	320	120	100	150	5	750	12	62.5	32
	Silk	260	190	140	193	10	1930	12	160.83	7
	Bed clothes	102	93	80	92	9	828	10	82.8	24
	Woolen textile	95	50	30	54	5	270	7	38.57	40
	Cotton quilted coat	100	60	30	62	20	1240	14	88.57	20
	Woman's clothing	30	15	13	17	25	425	15	28.33	43
Fourth floor	Cistern	35	24	18	25	10	250	10	25	44
	Audio & video 1	180	160	140	160	7	1120	8	140	8
	Audio & video 2	45	43	37	42	18	756	8	94.5	18
	Gold articles	35	31	22	30	20	600	14	42.86	37
	Telephone	26	25	18	24	25	600	7	85.71	22
	Decoration	21	44	25	37	30	1100	9	123.33	13
	Gift	36	32	22	31	15	465	12	38.75	39
	Sports goods	135	125	90	121	15	1815	9	201.67	3
	Bag & suitcase	38	36	21	34	15	510	8	63.75	31
	Light fixture	45	40	20	38	25	950	8	118.25	15
TV set	65	25	10	29	40	1160	16	72.5	27	
Watch	60	45	20	43	25	1075	9	119.44	14	

Table 2. Calculating for employment size of each counter

Floor	Counter	function quantity $F_i$ (minute)	initial number of salesclerks	standard salesclerk number $N_i = F_i \div 184.67$	reasonable salesclerk number $N^*$	$N = N^* - N_i$
First floor	Beauty treatment	2034	11	10.98	11	0
	Cigarette & wine	2151	13	11.62	12	-1
	Candy	1950	14	10.53	11	-3
	Electric appliance	605	9	3.27	3	-6
	Bike	800	11	4.32	4	-7
	Motorbike	165	8	0.89	1	-7
	Quick freezing	701	13	3.79	4	-9
	Body builder	849	10	4.58	5	-5
	Labor goods	970	7	5.24	5	-2
	Tea	576	6	3.11	3	-3
	Tool	250	7	1.35	3	-4
	Household appliance	510	10	2.75	3	-7
	Dried fruit	1389	10	7.50	8	-2
	Washing	900	11	4.86	5	-6
	Grocery	5000	12	12	27	+15
	Boiled foods	3915	13	21.14	21	+8
Cake	2199	12	11.87	12	0	
Small household appliance	660	10	3.56	4	-6	
Second floor	Articles by woman	516	6	2.79	3	-3
	Underwear	1240	9	6.70	7	-2
	Stationery	716	10	3.87	4	-6
	Traveling goods	146	8	0.79	5	-3
	Small needle	245	10	1.32	3	-7
	Rubber articles	496	10	2.68	5	5
	Sandal	290	12	1.57	5	-7
	Toy	1188	12	6.42	6	-6
	Children's shoes	426	9	2.30	5	-4
	Children's clothing	250	15	1.35	5	-10
	Aluminum product	765	18	4.13	4	-14
	Books	1116	12	6.03	6	-6
Third floor	Man's clothing	880	15	4.75	5	-10
	Trousers	225	9	1.38	4	-5
	Cotton	750	12	4.05	4	-8
	Silk	1930	12	10.42	10	-2
	Bed clothes	828	10	4.47	5	-5
	Woolen textile	270	7	1.46	3	-4
	Cotton quilted coat	1240	14	6.70	7	-7
	Woman's clothing	425	15	2.30	6	-9
Fourth floor	Cistern	250	10	1.35	3	-7
	Audio & video 1	1120	8	6.05	6	-2
	Audio & video 2	756	8	4.08	4	-4
	Gold	600	14	3.24	3	-11
	Telephone	600	7	3.24	3	-4
	Decoration	1100	9	5.94	6	-3
	Gifts	465	12	2.51	3	-9
	Sports goods	1815	9	9.80	10	+1
	Bag & suitcase	510	8	2.75	3	-5
	Light fixture	950	8	5.13	5	-3
	TV set	1160	16	6.26	6	-10
	Watch	1075	9	5.81	6	-3
Total	—	—	530	—	302	-228