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A Management Thinking to Solving Material Outsourcing Problems

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Abstract: In an environment with limited resources and keen competition, many companies have outsourced their non-core business to reduce their operational costs and concentrate on using limited resources to develop their core business. Based on the consideration of cost reduction, many case-study institutions have also outsourced materials management. However, this resulted in high staff turnover rates and operational problems. Therefore, this study employed DO-MITIC problem-solving strategies and logic to improve outsourcing operations, with the result that staff turnover rates were reduced, customers' satisfaction was enhanced and costs were substantially reduced, thus proving that DO-MITIC problem-solving strategies can enhance the effectiveness of materials management.

Key words: Outsourcing, materials management, DO-MITIC strategy, recruitment, management thinking

INTRODUCTION

Minoli (1995) pointed out that in order to enhance their core competitiveness, companies have to outsource their non-core business. Robbins and Coulter (2007) confirm that outsourcing can not only reduce costs but also enhance competitiveness. However, in the early days, companies only outsourced jobs that were low-cost and easy to find other people to do, such as telephone operators, cleaners, drivers and guard works. Later, even administrative work which was more professional, such as information and design, was also outsourced. Today, outsourcing has become the primary strategy for reducing personnel costs.

Using the thinking of six sigma, Rath and Strong (2006) took the first letters of the words define, measure, analyse, improve and control to develop the logic of the DMAIC strategy which aims to improve the operational process, eliminate errors and reduce costs to increase the benefit of production and services. However, in view of the fact that the existing standard of quality and technology in oriental countries was less able to control abstract ideas, Sheng *et al.* (2002) understood the logical thinking of Oriental people that more emphasised the scientific spirit of observation, inference/deduction, test and verification, proposed six steps of define, observe, measure, infer/induce, test, improve and control and took the their first letters to develop DO-MITIC processes as

Fig. 1. The Pareto principle was used during the implementation to transform practical problems into mathematical statistics. Having determined the optimal solutions, it further seeks a practical strategy for innovation and improvement and confirms operational steps and workable mathematical/statistic methods.

In order to save costs, many case-study institutions also outsourced non-core materials management (including import/export declarations and delivery, receipt, inspection and property management, etc.). In terms of implementation, they would ask the outsourcing company to hire responsible employees for materials management from the institution. However, these employees could not adjust to their new status as employees of the outsourcing company and many of them resigned, so the outsourcing company was forced to recruit to fill the vacancy. Even worse, the new recruits could not become familiar with the work quickly, so they also resigned. Thus, the materials management of the case-study institution was almost paralysed. Therefore, the purpose of this study was to develop a new management model for outsourcing.

EMPIRICAL ANALYSES

Because things did not go smoothly after the case-study institution outsourced its materials management, this study uses DO-MITIC problem-solving

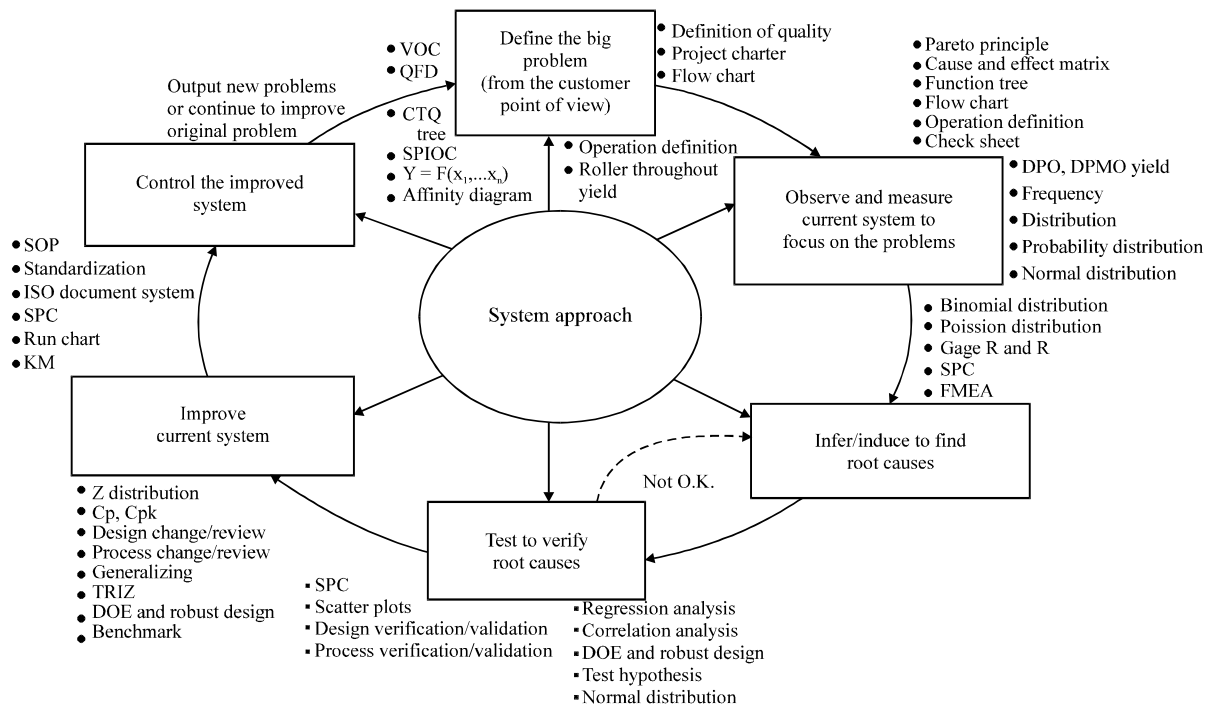


Fig. 1: The logic for DO-MITIC problem-solving strategy (Sheng *et al.*, 2002)

logical thinking and steps to improve the management dilemma which existed in the outsourcing operation.

Define big problems: By listening to the voices of customers and continuing to collect related potential customer demands, the same features were classified before three officers and six outsourced personnel in the department of materials management were invited to participate in a brain storm to determine the elements critical to quality (CTQ). Then, important factors like degree of attention given by the management, customer satisfaction and existing room for improvement (manpower, time and cost) were measured and scored, after which the three scores were multiplied and the total scores were calculated. The priority for improvement should be given to the items with a lower score as shown in Table 1.

The results in Table 1 illustrate that there were five primary problems which needed to be resolved, namely, not being able to impose penalties under the terms of the contract due to camaraderie; bad feeling due to different treatment; high resignation/turnover rates; lack of enthusiasm for work; and poor service and two outsourcing contractors. The CTQ needed to be improved; the checking mechanism for operation by

outsourcing personnel needed to be adjusted; the use of a dining card needed to be improved; the turnover rate of the outsourcing personnel needed to be reduced; customer service satisfaction needed to be enhanced; and all business needed to be outsourced to one contractor. According to the current situation, the item which scored the least and was therefore selected to be the priority item for improvement was reducing the turnover rate of outsourcing personnel before observing the current situation of turnover rate to focus on the problems.

Observing the current situation to focus on the problems: The materials management work includes import/export declaration, delivery, receiving goods, goods inspection and property management. The personnel allocations are shown in Table 2.

In line with organisational policy, the business had been outsourced since the 1st April, 2007. The total number of personnel outsourced was 19, 12 of whom were regular employees and seven were newly recruited to fill vacancies. Nine outsourced personnel were interviewed and provided reasons for high turnover rate and resignations as shown in Table 3.

The draft bar chart by business segment in Fig. 2 illustrates that, from April-August 2007, nine outsourced personnel, most of whom were responsible for inspecting

Table 1: Prioritisation matrix

Voice of customer (VOC)	Classify the same features of VOC	CTQ	Degree of management attention	Customer satisfaction	Existing room for improvement	Total scores
Some flaws in the implementation by outsourced personnel but cannot impose penalties under the terms of contract due to camaraderie. It is time-consuming for negotiating labour divisions and cooperation between officials and outsourced personnel	Difficult to deal with due to camaraderie	Adjust checking mechanism for operation by outsourced personnel	2	3	4	24
Outsourced personnel cannot use dining card and such different treatment from regular staff may cause them to feel uncomfortable	Bad feeling for different treatment	Improve dining card	3	3	2	18
Operational experience cannot be accumulated due to high resignation/turnover rates, as well as time and human resources are consumed for personnel training and business transfers. Outsourced personnel cannot see any future. Outsourced personnel are usually younger and can easily find another job. The pay for recruited outsourced personnel is relatively low and the load and nature of work is not proportional, so they are prone to become dissatisfied and resign from the job	High resignation/turnover rates of outsourced personnel	Reduce the resignation/turnover rates	1	2	3	6
Less centripetal force and enthusiasm for the organisation by outsourced personnel. Outsourced personnel could not meet the requirement of the organisation to write down their experiences and share their knowledge. Outsourced personnel only do what they should do and do not care about quality. Outsourced personnel cannot provide customers with satisfactory services due to having a passer-by mindset. Outsourced personnel lack enthusiasm for work because they feel exhausted and do not have equal treatment from colleagues and superiors	Lack of enthusiasm for work and poor service	Enhance customer service satisfaction	2	3	3	18
The company sub-contracts imports/exports, received goods, goods inspection and acceptance and property management business to different outsourcing contractors which complicates personnel management and lacks mutual support	Divide contractors into two outsourcing contractors	Should subcontract all business to one outsourcing contractor.	3	3	3	27

Criteria for management attention scores; 1: High attention to 5: Low attention, Criteria for customer satisfaction scores; 1: Low satisfaction to 5: High satisfaction, Criteria for existing room for improvement; 1: Large room for improvement to 5: Small room for improvement

and receiving goods, resigned. The turnover rate was so high that the work could not be done in time and a lot of complaints were received from customers. Furthermore, it wasted administrative work and human resources for education and training and others had to share the work.

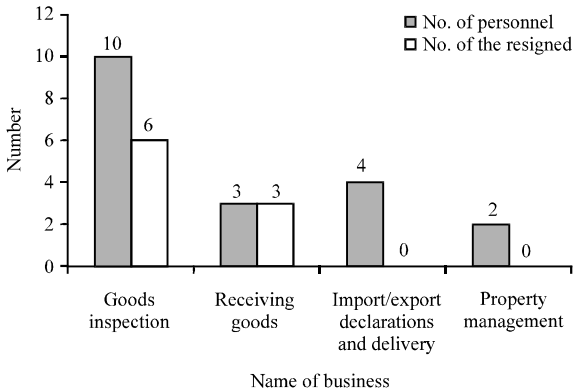


Fig. 2: Bar chart of statistics of resignations during April-August 2011

Table 2: Number of outsourced personnel for materials management

Type of work	No. of personnel
Goods inspection	10
Receiving goods	3
Import/export, declaration and delivery	4
Property management	2
Total	19

Table 3: Statistics of outsourced personnel from April to August 2007

Name	Education	Age	Day post assumed	Day resigned	Primary causes of resignation	Main task
A	University	29	2007/03/01	2007/07/31	Like office assistant work	Goods inspection
B	Senior High	45	2007/03/19	2007/06/30	Prefer flexible-time working	Goods inspection
C	University	23	2007/03/19	2007/06/30	Work is not challenging	Goods inspection
D	University	23	2007/04/01	2007/07/31	Incompetent and dismissed	Receiving Goods
E	Senior High	20	2007/07/03	2007/08/17	The work is exhausting, young and easy to find another job	Goods inspection
F	University	29	2007/08/01	2007/08/21	Monthly compensation is not commensurate with workload, humble position and no future	Goods inspection
G	University	25	2007/08/01	2007/08/31	Outsourced personnel feel uncomfortable because they cannot use dining cards like regular staff	Goods inspection
H	Academy	50	2005/04/01	2007/08/31	Work is exhausting, take early retirement	Receiving goods
I	University	27	2007/03/01	2007/08/31	Home is in Ping-Tung, so find another job in southern Tainan	Receiving goods

Table 4: Statistics of votes by the representatives of materials management outsourced personnel

Controllable factors (X) and noise (N)	First round (two-vote voter)	Second round (one-vote voter)	Third round (one-vote voter)	Highest votes
The interviewer did not fully tell the applicant the contents of the job (X)	4	4	4	✓
No sense of achievement (X)	1			
No challenge (X)	1			
Less incentive (X)	1			
Incompetent and was dismissed (X)	0			
Few applicants for selection (N)	1			
Low salary for recruits (N)	3	2	1	
Poor welfare (N)	2			
Not allowed to use dining card (N)	3	3	4	✓
Cannot retain young female personnel (N)	0			
Workers under 40 years-old cannot endure too much physical exertion (N)	1			
Difficult to negotiate with some users (N)	1			

✓: Causes for high turnover rates

The high turnover rate annoyed executives and even senior executives were concerned. Therefore, this study focuses on managing the customer complaints caused by the high turnover rate of outsourced personnel who were responsible for inspecting and receiving goods.

Infer/deduce to determine root causes: An analyses of primary causes was conducted based on the “fishbone diagram” proposed by The US Navy Total Quality Leadership Office (2012) and having brainstormed with outsourced personnel and interviewed resigned personnel, various reasons that affected their decision to resign are shown in Fig. 3.

Various factors were defined from the results of the analysis of the Fishbone Diagram and these were divided into Constants (C), Noise (N) and Control (X) and then the controllable factors and noise were listed as follows. Nine outsourced personnel were asked to infer/deduce and determine the causes through a multiple-choice method. The implemented voting process and results are shown in Table 4. Two items, namely, “the interviewer did not fully tell the applicants the contents of the job” and “not allowed to use a dining card” received the highest votes. So these two items were inferred/deduced as being the most important influencing factors.

Test and confirm causes: In this study, the above-mentioned 12 factors were inserted into a questionnaire

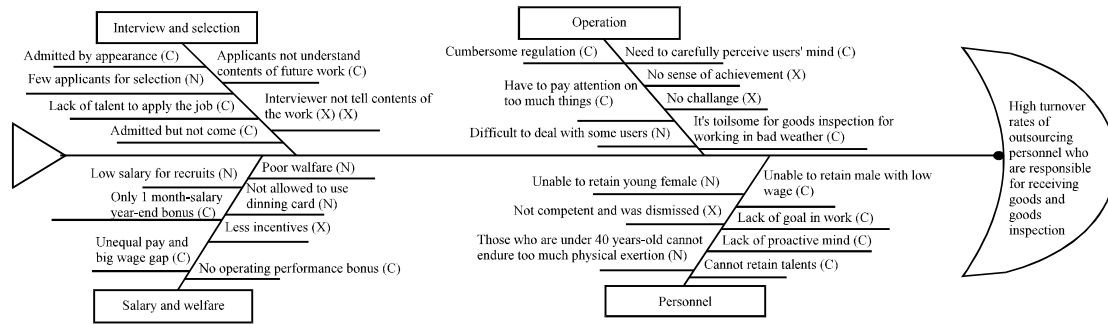


Fig. 3: Fishbone chart showing high turnover rates of outsourced personnel who were responsible for inspecting and receiving goods which caused service/management problems, C: Constants, N: Noise and X: Control

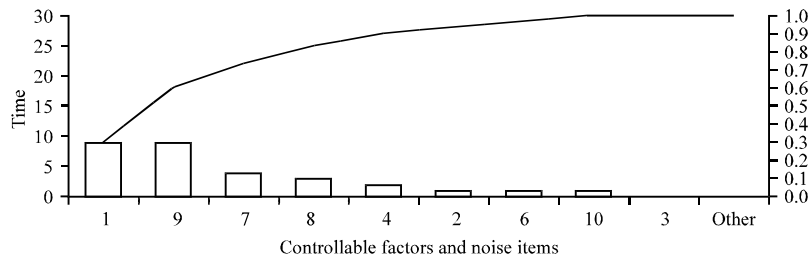


Fig. 4: Pareto chart of high turnover rates of outsourced personnel who were responsible for inspecting and receiving goods which caused customers' complaints and management problems, 1-10 description is given in Table 5

Table 5: Results of questionnaire survey

Controllable factor (X) and noise (N)	Times of check	Highest votes
1: The interviewer did not fully tell the applicants the contents of the job (X)	9	✓
2: No sense of achievement (X)	1	
3: No challenge (X)	0	
4: Less incentive (X)	2	
5: Incompetent and was dismissed (X)	0	
6: Few applicants for selection (N)	1	
7: Low salary for recruits (N)	4	
8: Poor welfare (N)	3	
9: Not allowed to use dining card (N)	9	✓
10: Cannot retain young female personnel (N)	1	
11: Workers under 40 years-old cannot endure too much physical exertion (N)	0	
12: Difficult to negotiate with some users (N)	0	

✓: Causes for high turnover rates

and a survey was conducted with 30 materials management outsourced personnel to confirm the reasons for their resignation (multiple-choice). The results are shown in Table 5 and drafted as a Pareto Chart in Fig. 4.

When reviewing the Pareto Chart, it can be seen that two of the causes were the same as the root causes found in inference/induction. Thus, it can be confirmed that “the interviewer did not fully tell the applicants the contents of the job” and “not allowed to use dining card” are the causes of the high turnover rate of outsourced personnel who are responsible for inspecting and receiving goods.

IMPROVING THE EXISTING SYSTEM

Having been tested and confirmed the causes, the relative personnel were invited to discuss and explore the operational model for interviewers to ensure that they fully tell applicants the contents of the job and this was approved accordingly. The problem of outsourced personnel not being allowed to use the dining card was also resolved.

Exploring the operational model for interviewers: In the existing recruitment and selection process, the outsourcing company firstly looks for candidates on the Internet before interviewing them, when the applicants are told roughly about the contents of the job. Afterwards, successful candidates are selected. This kind of recruitment adopts a “work in the paper” model, so that the applicants cannot completely recognize and grasp the nature of the future work. This is an important cause of resignation. Therefore, by means of brainstorming, a strategy of “practically observing receiving goods and goods inspection on site for 3 h, including filing” was proposed to ensure that the applicants really understood what they would have to do if they were hired. The model is shown in Fig. 5.

Table 6: Statistics of turnover between March 2007 and December 2007

Recruitment period	No. of recruits	Turnover	Notes
2007.03.01-08.01	8	8	Turnover rate 100% (within 5 months)
2007.08.07	1	0	Interviewees practically observe the process on site for 3 h
2007.09.01	2	0	Interviewees practically observe the process on site for 3 h
2007.10.01	3	0	Interviewees practically observe the process on site for 3 h

Table 7: Confirmation sheet for 3 h practical observation

For applying your company's _____ of outsourcing job, after 3 h on-site practical observation, I have preliminary understanding of job, the items are listed as follows (please check):

- On-site observation of the process of under-one-million goods inspection
- On-site observation of the process of meeting of over-one-million goods inspection
- Observe the process of related investigations and specifications, usage/taking pictures of equipment
- Observe the practices of receiving goods

Applicant: ----- Observation leader: ----- Executive in charge of outsourcing: -----

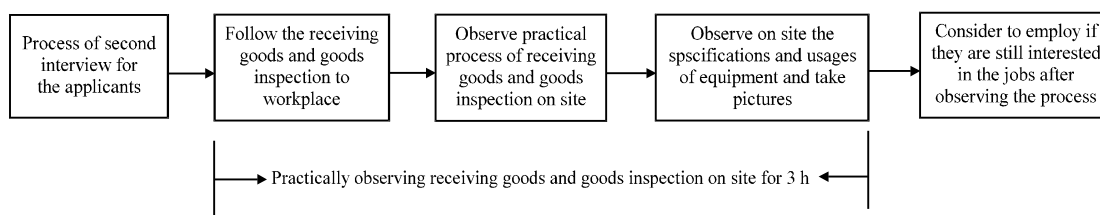


Fig. 5: The operation model of strategy for applicants to observe the process of receiving goods and goods inspection for 3 h

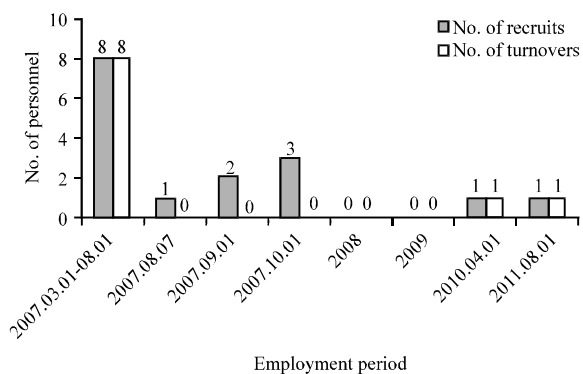


Fig. 6: The statistics of number of turnovers between March 2007 and December 2011

This improved approach was trialed in August, 2007 and the turnover rate was reduced to 0%. The comparison of benefits before and after the trial is shown in Table 6.

Figure 6 shows the phenomenon of employees leaving. There is no employee leaving the organization after implementation of DO-MITIC outsourcing process. Only one each employee turnover for 6 months in 2010 and 2011 because of pregnant.

Resolving the problem of outsourced personnel being unable to use the dining card: According to the rules of the case-study company, the outsourced personnel are not allowed to use a dining card and have to pay cash for

their meals. Thus, the materials management outsourced personnel found this to be inconvenient and felt that they were being subjected to differential treatment. After failing to reach an agreement with the restaurant, the executive of the materials management department reported the matter to his superior and asked for help. Finally, the restaurant agreed to allow the outsourced personnel to use a dining card and the outsourcing company paid the bill every month.

Having resolved the problem of the dining card and implemented the model of “practically observing receiving goods and goods inspection process on site for 3 h”, the turnover rate reduced to 0% in 3 months.

Controlling the improved system: “Applicants practically observe receiving goods and goods inspection process on site for 3 h” was inserted into the recruitment SOP and a checklist was established as shown in Table 7. The checklist will be signed by the person in charge of the observation and the applicants after practically observing for 3 h before being sent to the executive responsible for outsourcing for confirmation and control. The executive needs to ensure that a mechanism is implemented to settle the monthly dining card bill.

RESULTS

After the implementation, the turnover rate was dramatically reduced and a breakthrough was made in the

Table 8: The costs for turnovers/recruits

Item of the costs for turnovers/recruits	Incurred costs/reasonable estimation (NT\$ per person)	Participants
Costs for recruitment and interviews	30,000	Executives and staff of personnel department
Costs for recruitment/turnover administrative process	20,000	Executives and staff of related department
Costs for recruits training and education	50,000	Executives and staff of related department
Costs for overtimes for sharing the recruits' work by other staff	50,000	Executives and staff
Costs for interviewing with turnover personnel	20,000	Related executives
Costs for taking over the work left by turnover personnel	50,000	Executives and staff of related department
Costs for supervision and management by executives	1,00,000	Related executives
Total cost for turnover and recruitment per person	3,20,000	
Total costs for nine personnel resigned and recruitment	2,880,000	

management's dilemma. The resignation rate of outsourced personnel for materials management in the case-study company significantly improved. During September 2007 and December 2011, except for a special situation in which two people were on maternity leave for 6 months and the company needed to recruit, the turnover rate reduced to 0%. This did not only help the work to go smoothly but also the customer service satisfaction rate rose to 4.21 from 3.6. The staff of the case-study company received quick and satisfactory materials management services which enabled them to bring their expertise into full play and in turn, this enhanced the firm's competitiveness by innovation. Besides, since the turnover rate was reduced to 0%, the company saved NT\$ 2,880,000 annually, as shown in Table 8.

CONCLUSION

Outsourcing means to transfer less competitive and non-core business to contractors and its primary purpose is to reduce costs and enhance competitiveness (Lockwood, 2012; Holweg and Pil, 2012; Jensen and Pedersen, 2012). Having outsourced materials management, the case-study company did reduce costs (Anner, 2011; Lai *et al.*, 2012; Nunez, 2009); however, the turnover rate of outsourced personnel was extremely high (the turnover rate of the recruits was 100% in 5 months). Applying the logic of a DO-MITIC problem-solving strategy to improving the turnover of outsourced personnel (Salvador and Terry, 2010; Wehner *et al.*, 2012), the study began by collecting the opinions of customers, defining the big problems and reviewing the turnover situation. It broke the existing thinking for the recruitment process and provided the interviewees with a practical on-site observation for 3 h. It also enabled the outsourced personnel to use the dining card mechanism which helped the applicants to understand their possible work and avoid inconsistency with their expectations after they had been hired. Furthermore, the personnel felt that they were respected and being treated equally and their psychological needs were satisfied by permitting them to use the dining card. When the needs mentioned in

Maslow's Need-Hierarchy Theory were respected, the disappointment and turnover were dramatically improved.

The process was also coupled with tools such as brainstorming, a Pareto chart and a fishbone chart. The improved design attached great importance to good interaction with the outsourced personnel and a clear description of the work expected of them. After the implementation up until December 2011, except for a special situation in which two female workers were on maternity leave for 6 months, it created a record of no turnover during 4 years and saved annual costs of recruitment, training and management of around NT\$ 2,880,000. In addition, the customer service satisfaction was enhanced to more than 4.0 and even to 4.21 in 2012. The thinking logic of DO-MITIC problem-solving has helped the company to fully achieve its purpose of cost reduction and the enhancement of customer satisfaction and again proved that it can improve management effectiveness.

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