

## CHAPTER 6

### EVALUATION OF EFFECTIVENESS OF DATA MART IMPLEMENTATION

In this chapter, the evaluation of effectiveness in Data Mart Implementation is presented. It based on the Miller-Doyle Approach that uses a questionnaire as a tool to evaluate user satisfaction by comparing user expectations with the perceived performance of the IS (Information System) on a number of different facets of IS. The questionnaire comprises of 32 questions that are adapted from both The Miller-Doyle Approach and A Multiple Gap Approach. The questions are divided into 4 groups; system performance, the ability of the system to develop the organisation, the quality of the project team, and others which those are not included in first three groups. Firstly, the tool of evaluation is described. Then, target population of evaluation and duration and procedure of collecting data are presented. Next, the questionnaire results are shown. Finally, conclusion and suggestion of evaluation are presented. The evaluation of effectiveness of Data Mart implementation spent 8 weeks started from 15/07/2003 — 31/08/2003. It was conducted after Data Mart had been used in AAA 3 months.

#### 6.1 Tools of Evaluation

In this thesis, the questionnaire is used to evaluate the effectiveness of Data Mart implementation. The questionnaire is divided into five parts as follows. (The original questionnaire is shown in Appendix D)

Part 1: Respondents' personal information. This part consists of 5 questions.

The questions in this part refer to respondents' personal information; level of respondents in organization, department of respondents in organization, frequency of using

Data Mart of respondents, familiar with using PC (Personal Computer) of respondents, behavior of respondents in accessing Data Mart.

Part 2: The expectation of respondents on each attribute of system. This part consists of 32 questions.

The questions in this part refer to the attributes of the system, which respondents believe are important to the effectiveness in implementing Data Mart project. Scale was used in the questions in this part referred to Likert Scale. This kind of scale is divided rating into 5 scales which name of each scale subjected to the objective of questions. The question in this part, the scales is divided into 5 scales; Very important, Fairly important, Neutral, Not so important, and Not at all important which each scale is scored 5, 4, 3, 2, and 1 respectively.

The questions in part 2 are divided into 4 groups;

#### 2.1 System performance

This group consists of 11 questions. (Question no.1-11)

#### 2.2 The ability of the system to develop the organization

This group consists of 8 questions. (Question no. 12-19)

#### 2.3 The quality of the project team

This group consists of 6 questions. (Question no. 20-25)

#### 2.4 Others

The questions in this group are those, which are not fall into 3 groups above. This group consists of 7 questions (Question no. 26-32)

Part 3: Performance perceptions of respondents. This part consists of 32 questions.

The questions in this part are generally similar to part 2 but it is referred to how the Data Mart project is performed in term of each attribute.

Scale was used in the questions in this part also referred to Likert Scale. The scale in this part is divided into 5 scales; Very good, Good, Neutral, Poor, and Not good at all which each scale is scored 5, 4, 3, 2, and 1 respectively.

The questions in part 3 are divided into 4 groups as same as part 2;

### 3.1 System performance

This group consists of 11 questions (Question no. 1-11)

### 3.2 The ability of the system to develop the organization.

This group consists of 8 questions (Question no. 12-19)

### 3.3 The quality of the project team.

This group consists of 6 questions (Question no. 20-25)

### 3.4 Others

The questions in this group are those, which are not fall into 3 groups above. This group consists of 7 questions (Question no. 26-32)

Part 4: Respondents' satisfaction on reports proceed by Data Mart. This part consists of 2 sub-questions.

In this part, the respondents are required to indicate the level of satisfaction to the report proceed by Data Mart, and answer only those part concerned to the respondent's department. There are 2 sub-questions in this part.

For the first sub-question, the respondents specify the way that they use to construct the report. In case the respondents use Data Mart, they can go directly to sub-question number 2 but in case the respondents don't use the Data Mart, they skip to the next questions.

For the second sub-question, the respondents specify the level of their satisfaction toward the report provided by Data Mart. Scale was used in the questions in this part also referred to Likert Scale. The scale is divided into 5 scales; Very satisfied, Some what satisfied, Fair, Some what dissatisfied, and Very dissatisfied at all which each scale is scored 5, 4, 3, 2, and 1 respectively.

Part 5: Overall performance of Data Mart implementation. This part consists of 2 questions.

The first question, the respondents are required to rate overall performance of implementing the Data Mart. Scale was used in the questions in this part referred to Likert

Scale. The respondents are required to rate their believe on 5 scales; Very successful, Successful, Neither successful nor failed, Failed, and Completely failed which each scale is scored 5, 4, 3, 2, and 1 respectively.

The second question is the open-ended question in which respondents can give any comments and suggestions concerning their own experience from the Data Mart project.

## **6.2 Target Population of Evaluation**

The target population is employees in all business departments of AAA company which concern using the Data Mart; Cement Business Department, Steel Products Department, General Merchandize Department, Building Materials Department, Aluminum Department, Industrial products Department, Energy Department, International Sourcing Department, Pulp and Paper Department, and Plastic and Chemical Department.

95 questionnaires were sent to all target population and received back 84 questionnaires or 88.42 % of target population.

## **6.3 Duration and Procedure of Collecting the Data**

The evaluation of Data Mart implementation effectiveness uses Cross-Sectional Approach, using this approach, questionnaires are dispatched and collected back on one period. The evaluation takes totally 6 weeks from dispatching questionnaire to target population until concluding the results of questionnaire; 2 week was spent for dispatching the questionnaire to respondents and receiving back and 4 weeks was spent for analyzing and concluding the results of questionnaire.

## 6.4 Questionnaire Results

The presentation of questionnaire results is divided into 4 parts as follows.

6.4.1 The personal information of respondents

6.4.2 The expectation and performance perceptions of respondents on implementation effectiveness of Data Mart project

6.4.3 Users' satisfaction on the report format by department

6.4.4 Overall users' attitude on implementation effectiveness of Data Mart project

6.4.5 Comments and suggestions

### 6.4.1 The Personal Information of Respondents

In this part, the results of questionnaire, part 1, the personal information of respondents, are presented as following below.

#### 6.4.1.1 The Level of Respondents in the Organization

According to the questionnaire results of the level of respondents in the organization, respondents are in level of management 10 persons, supervisor 63 persons, and coordinator 11 persons or 11.90 %, 75.00 %, and 13.10 % of all respondents respectively as shown in Table 6.1.

Table 6.1: The number and percentage by respondents' level in the organization

The level of respondents in the organization	Number	Percentage
Management	10	11.9
Supervisor	63	75
Coordinator	11	13.1
Total	84	100

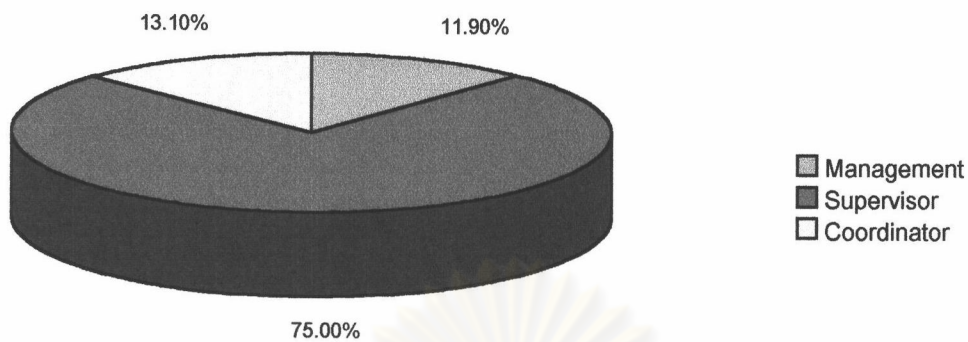


Figure 6.1: The percentage by respondents' level in the organization

From the data in Table 6.1, the most of respondents, 63 persons or 75 % of all respondents, is in level of supervisor and the least of respondents, 10 persons or 11.90 % of all respondents, is in level of management.

#### 6.4.1.2 Department of Respondents in the Organization

According to the questionnaire results of department of respondents in the organization, respondents are in Cement Business Department, General Merchandize Department, Steel Products Department, Building Material Department, Plastics and Chemicals department, Aluminum Department, Pulp and Paper Department, Industrial Products Department, Energy Department, and International Sourcing Department, 17,8,8,14,6,5,4,10,6,and 6 persons respectively or 20.24%, 9.52%, 9.52%, 16.67%, 7.14%, 5.95%, 4.76%, 11.90%, 7.14%, and 7.14% of all respondents respectively as shown in Table 6.2.

Table 6.2: The number and percentage by department of respondents in the organization

Department of respondents in the organization	Number	Percentage
Cement Business Department	17	20.24
General Merchandize Department	8	9.52
Steel Products Department	8	9.52
Building Material Department	14	16.67
Plastic and Chemical Department	6	7.14
Aluminum Department	5	5.95
Pulp and Paper Department	4	4.76
Industrial Product Department	10	11.90
Energy Department	6	7.14
International Sourcing Department	6	7.14
Total	84	100.00

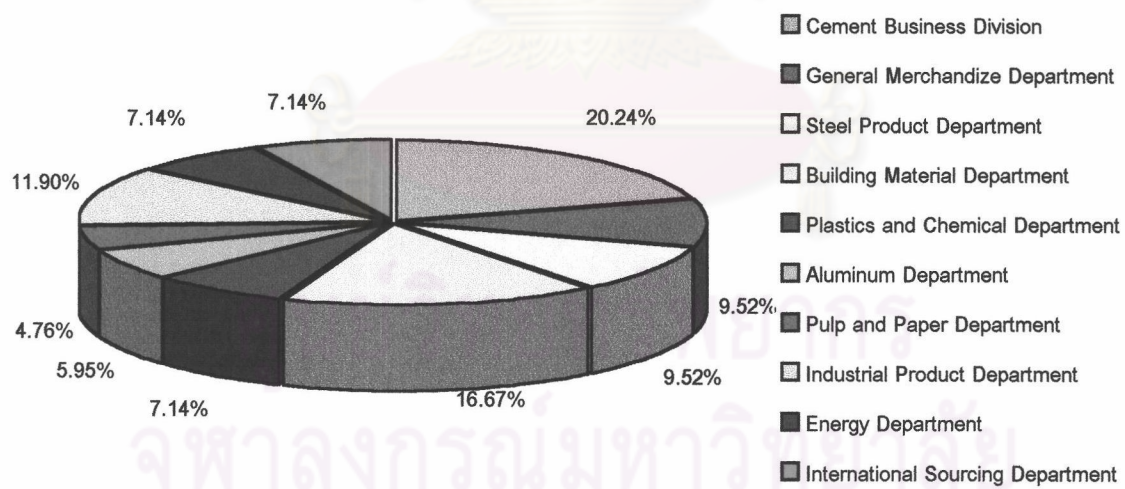


Figure 6.2: The percentage by department of respondents in the organization

From data in Table 6.2, the most of respondents, 17 persons or 20.24 % of all respondents, is in Cement Business department and the least of respondents, 4 persons or 4.76 % of all respondents, is in Pulp and Paper Department.

#### 6.4.1.3 Frequency of Using Data Mart of Respondents

According to the questionnaire results of frequency of using Data Mart of respondents, respondents use Data Mart every day, 2-3 times a week, 2-3 times a month, Less than 1 time a month, and never, 2, 22, 32, 17, and 11 persons respectively or 2.38%, 26.19%, 38.10%, 20.24%, and 13.10% of all respondents respectively as shown in Table 6.3.

Table 6.3: The number and percentage by the frequency of using Data Mart of respondents

Frequency of using Data Mart of respondents	Number	Percentage
Every Day	2	2.38
2-3 times a week	22	26.19
2-3 times a month	32	38.10
Less than 1 time a month	17	20.24
Never	11	13.10
Total	84	100.00

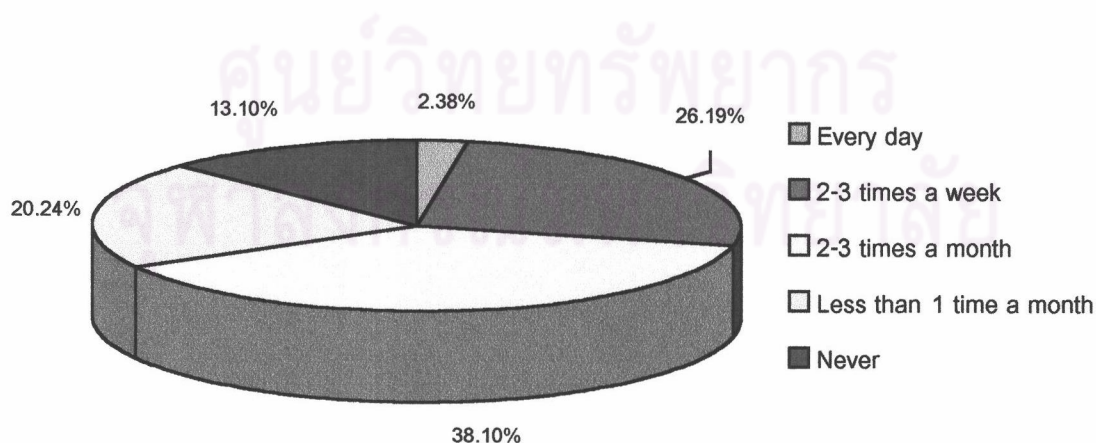


Figure 6.3: The percentage by the frequency of using Data Mart of respondents



From data in Table 6.3, the most of respondents, 32 persons or 38.10 % of all respondents, uses Data Mart 2-3 times a month and the least of respondents, 2 persons or 2.38% of all respondents, uses Data Mart every day.

#### 6.4.1.4 Familiar of Respondents with Using PC (Personal Computer)

According to the questionnaire results of familiar of respondents with using PC, respondents are familiar with using PC in level of expert, above average, average, below average, and poor, 11,46,26,1, 0 persons respectively or 13.10 %, 54.76%, 30.95%, 1.19%, and 0% of all respondents respectively as shown in Table 6.4.

Table 6.4: The number and percentage of the familiar of respondents with using PC

Familiar of respondents with using PC	Number	Percentage
Expert	11	13.10
Above average	46	54.76
Average	26	30.95
Below average	1	1.19
Poor	0	0.00
Total	84	100.00

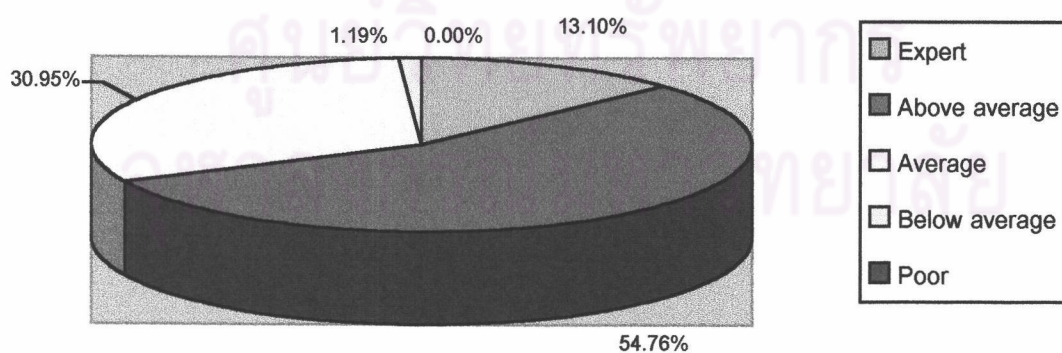


Figure 6.4: The percentage of the familiar of respondents with using PC

From data in Table 6.4, the most of respondents, 46 persons or 54.76 % of all respondents, are familiar with using PC in level of above average and no respondents who are familiar with using PC in level of poor.

#### 6.4.1.5 Behavior of Respondents in Accessing Data Mart

According to the questionnaire results of behavior of respondents in accessing Data Mart, respondents access Data Mart by their own, other access for them, and occasionally access by their own, occasionally others access for them, 21, 31, and 32 persons or 25%, 36.90%, and 38.10% of all respondents as shown in Table 6.5.

Table 6.5: The number and percentage by the behavior of respondents in accessing Data Mart

Behavior of respondents in Accessing Data Mart	Number	Percentage
Accessing by their own	21	25.00
Others access for them	31	36.90
Occasionally access by their own, occasionally others access for them	32	38.10
Total	84	100.00

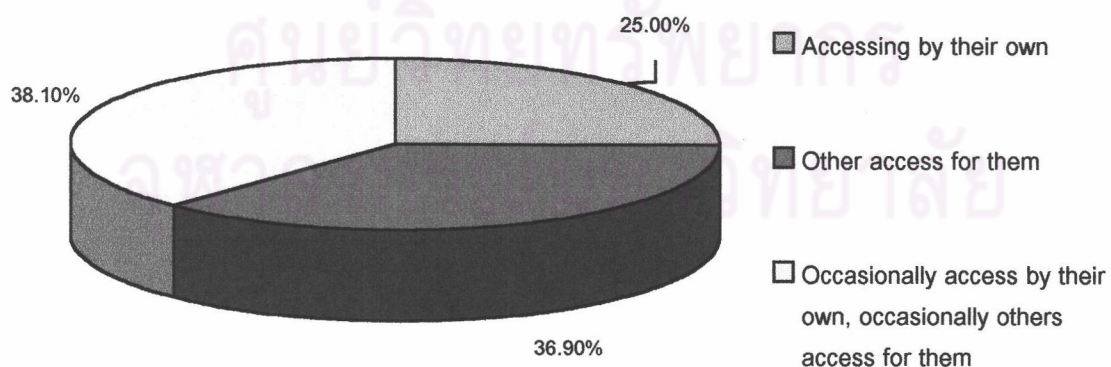


Figure 6.5: The percentage by the behavior of respondents in accessing Data Mart

From data in Table 6.5, the most respondents, 32 persons or 38.10 % of all respondents, occasionally access by their own, occasionally others access for them and the least respondents, 21 persons or 25% of all respondents, access Data Mart by their own.

#### **6.4.2 The Expectation and Performance Perceptions of Respondents on Implementation Effectiveness of Data Mart Project**

In this part the results of questionnaire, part 2 and part 3, are presented by comparison between the expectation and performance perceptions of respondents on implementation effectiveness of Data Mart. Gap between expectation and perceptions is also shown so that see the size of different between the expectation and actual performance and in order to compare and performance in each of question, the mean score of performance by groups of attribute is presented.



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### 6.4.2.1 The Expectation and Performance Perceptions Arranged in Order of Expectation from The High to Low of The Mean Score ( X )

Table 6.6: The Mean score of expectation and performance perceptions of Data Mart's users arranged in order of expectation from the high to low of the mean score

No. of Question	Rank	Expectation	Rank	Performance
10. The ability of the system to generate the report according to the target and user requirements	1	4.65	6	3.70
6. The precision of the data generated by the system	2	4.63	5	3.70
27. The training before using the system	3	4.56	31	2.68
5. The completeness of the data generated by the system	4	4.56	11	3.52
4. The simplicity of the system to access	5	4.45	26	3.12
20. The staffs' effort to develop the system	6	4.45	1	4.20
14. The ability of the system to provide the important information for business decision- making	7	4.43	14	3.49
2. The ability of the system to change the format of the report	8	4.35	3	3.86
28. The completeness of the working manual	9	4.29	30	2.76
8. The ability of the system to secure and correct the data effectively	10	4.27	22	3.25
21. The good attitude of the project staffs toward the users	11	4.25	2	4.15
22. The technical capabilities of the IT staffs in the projects	12	4.25	4	3.85
17. The ability of the system to collect and maintain the organizational knowledge	13	4.20	15	3.45
15. The ability of the system to reduce the working period	14	4.19	10	3.55
31. Your understanding toward the way to use the system	15	4.13	28	2.96
7. The low level of the system's downtime	16	4.13	17	3.38
9. The sufficiency of the hardware and software to access to the system	17	4.10	32	2.61
18. The ability of the system to reduce the overall organizational cost	18	4.06	25	3.13
11. The ability of the system to extend the scope and support the upcoming system in the future	19	4.05	12	3.50
12. The ability of the system to response to the organization's need and the organizational strategies	20	4.05	18	3.36
3. The quickness of the system to change the format of the report	21	4.05	19	3.36
1. Up-to-datedness of Software (Microsoft Excel)	22	4.04	8	3.61
30. Your understanding toward the usefulness of the system	23	4.01	29	2.87
16. The ability of the system to explore more opportunities to generate more organizational profit	24	4.00	27	3.08
23. The ability of the staffs to coordinate and communicate with you	25	4.00	7	3.65
24. The appropriateness of the project implementation steps	26	4.00	9	3.60
13. The ability of the system to increase the employees' productivity	27	3.98	23	3.24
26. Your involvement to share and present the ideas towards the project implementation	28	3.90	16	3.43
32. Your feeling to use the system	29	3.88	21	3.27
29. Your confidence toward the systems	30	3.86	20	3.27
25. The project can be finished on time	31	3.70	13	3.50
19. The ability of the system to support CRM (Customer Relationship Management)	32	3.69	24	3.18
<b>All attributes average</b>		<b>4.16</b>		<b>3.38</b>

According to Table 6.6, all attributes average in term of expectation is 4.16 and all attributes average in term of performance perception is 3.38. Gap between all attributes average in term of expectation and performance perception is 0.78.

□ The top five rank of high score in term of expectation

The top five rank of high score in term of expectation of users can be arranged in order of mean score; “ The ability of the system to generate the report according to the target and user requirement”, “ The precise of the data generated by the system”, “ The training before using the system”, “The completeness of the data generated by the system”, and” The simplicity of the system to access” ranked number 1, 2, 3, 4, and 5 respectively with the mean score of 4.65, 4.63, 4.56, 4.56, and 4.45 respectively.

□ The comparison between expectation and performance perceptions on each attribute

From data in Table 6.6, some attributes are high expected from users but they are low performed on performance as below

“ The training before using the system” is ranked third in term of expectation but thirty-first on performance with the mean score of 4.56 and 2.68 respectively.

“ The completeness of the working manual is ranked ninth in term of expectation but thirtieth on performance with the mean score of 4.29 and 2.76 respectively.

“ The understanding of the users toward the way to use the system” is ranked fifteenth in term of expectation but twenty-eighth on performance with the mean score of 4.13 and 2.96 respectively.

“ The sufficiency of the hardware and software to access to the system is ranked seventeenth in term of expectation but thirty-second on performance with the mean score of 4.10 and 2.61 respectively.

There are 26 attributes which the mean score in term of expectation more than 4.00 and only 6 attributes which the mean score in term of expectation less than 4.00.

### 6.4.2.2 The Expectation and Performance Perceptions Arranged in Order of Performance Perceptions from The High to Low of The Mean Score.

Table 6.7: The Mean score of expectation and performance perceptions of Data Mart's users arranged in order of performance perceptions from the high to low of the mean score

No. of Question	Rank	Expectation	Rank	Performance
20. The staffs' effort to develop the system	6	4.45	1	4.20
21. The good attitude of the project staffs toward the users	11	4.25	2	4.15
2. The ability of the system to change the format of the report	8	4.35	3	3.86
22. The technical capabilities of the IT staffs in the projects	12	4.25	4	3.85
6. The precision of the data generated by the system	2	4.63	5	3.70
10. The ability of the system to generate the report according to the target and user requirements	1	4.65	6	3.70
23. The ability of the staffs to coordinate and communicate with you	25	4.00	7	3.65
1. Up-to-datedness of Software (Microsoft Excel)	22	4.04	8	3.61
24. The appropriateness of the project implementation steps	26	4.00	9	3.60
15. The ability of the system to reduce the working period	14	4.19	10	3.55
5. The completeness of the data generated by the system	4	4.56	11	3.52
11. The ability of the system to extend the scope and support the upcoming system in the future	19	4.05	12	3.50
25. The project can be finished on time	31	3.70	13	3.50
14. The ability of the system to provide the important information for business decision - making	7	4.43	14	3.49
17. The ability of the system to collect and maintain the organizational knowledge	13	4.20	15	3.45
26. Your involvement to share and present the ideas towards the project implementation	28	3.90	16	3.43
7. The low level of the system's downtime	16	4.13	17	3.38
12. The ability of the system to response to the organization's need and the organizational strategies	20	4.05	18	3.36
3. The quickness of the system to change the format of the report	21	4.05	19	3.36
29. Your confidence toward the systems	30	3.86	20	3.27
32. Your feeling to use the system	29	3.88	21	3.27
8. The ability of the system to secure and correct the data effectively	10	4.27	22	3.25
13. The ability of the system to increase the employees' productivity	27	3.98	23	3.24
19. The ability of the system to support CRM (Customer Relationship Management)	32	3.69	24	3.18
18. The ability of the system to reduce the overall organizational cost	18	4.06	25	3.13
4. The simplicity of the system to access	5	4.45	26	3.12
16. The ability of the system to explore more opportunities to generate more organizational profit	24	4.00	27	3.08
31. Your understanding toward the way to use the system	15	4.13	28	2.96
30. Your understanding toward the usefulness of the system	23	4.01	29	2.87
28. The completeness of the working manual	9	4.29	30	2.76
27. The training before using the system	3	4.56	31	2.68
9. The sufficiency of the hardware and software to access to the system	17	4.10	32	2.61
<b>All attributes average</b>		<b>4.16</b>		<b>3.38</b>

- The top five rank of high score in term of performance perceptions

According to Table 6.7, the top five rank of high score in term of performance perceptions of users can be arranged in order of mean score; "The staffs' effort to develop the system", "The good attitude of the project staffs toward the users", "The ability of the system to change the format of the report", "The technical capabilities of the IT staffs in the projects", and "The precise of the data generated by the system" ranked number 1, 2, 3, 4, and 5 respectively with the mean score of 4.20, 4.15, 3.86, 3.85, and 3.70 respectively.

- The top five rank of low score in term of performance perceptions

The top five rank of low score in term of performance perceptions of users can be arranged in order of score; "The sufficiency of the hardware and software to access to the systems", "The training before using the system", "The completeness of the working manual", "The understanding of the users toward the usefulness of the system", and "The understanding of the users toward the way to use the system" ranked number 32, 31, 30, 29, and 28 respectively with the mean score of 2.61, 2.68, 2.76, 2.87, and 2.96 respectively.

- There are 2 attributes which the mean score in term of performance perceptions more than 4.00; "The staffs' effort to develop the system" and "The good attitude of the project staffs toward the users" with the mean of score, 4.20 and 4.15 respectively and there are 5 attributes which the mean score in term of performance perceptions less than 3.00; "The sufficiency of the hardware and software to access to the system", "The training before using the system", "The completeness of the working manual", "The understanding of the users toward the usefulness of the system", and "The understanding of the users toward the way to use the system" with the mean score of 2.61, 2.68, 2.76, 2.87, and 2.96 respectively.

### 6.4.2.3 Gap Between Expectation and Performance Perceptions Arranged in Order of Size of Difference from Small to Big

Table 6.8: Gap between expectation and performance perceptions arranged in order of size of difference from small to big

Question	Expectation	Performance	Rank	Gap
21. The good attitude of the project staffs toward the users	4.25	4.15	1	0.10
25. The project can be finished on time	3.70	3.50	2	0.20
20. The staffs' effort to develop the system	4.45	4.20	3	0.25
23. The ability of the staffs to coordinate and communicate with you	4.00	3.65	4	0.35
22. The technical capabilities of the IT staffs in the projects	4.25	3.85	5	0.40
24. The appropriateness of the project implementation steps	4.00	3.60	6	0.40
1. Up-to-datedness of Software (Microsoft Excel)	4.04	3.61	7	0.43
26. Your involvement to share and present the ideas towards the project implementation	3.90	3.43	8	0.48
2. The ability of the system to change the format of the report	4.35	3.86	9	0.49
19. The ability of the system to support CRM (Customer Relationship Management)	3.69	3.18	10	0.51
11. The ability of the system to extend the scope and support the upcoming system in the future	4.05	3.50	11	0.55
29. Your confidence toward the systems	3.86	3.27	12	0.58
32. Your feeling to use the system	3.88	3.27	13	0.61
15. The ability of the system to reduce the working period	4.19	3.55	14	0.64
12. The ability of the system to response to the organization's need and the organizational strategies	4.05	3.36	15	0.69
3. The quickness of the system to change the format of the report	4.05	3.36	16	0.69
13. The ability of the system to increase the employees' productivity	3.98	3.24	17	0.74
17. The ability of the system to collect and maintain the organizational knowledge	4.20	3.45	18	0.75
7. The low level of the system's downtime	4.13	3.38	19	0.75
16. The ability of the system to explore more opportunities to generate more organizational profit	4.00	3.08	20	0.92
18. The ability of the system to reduce the overall organizational cost	4.06	3.13	21	0.93
6. The precision of the data generated by the system	4.63	3.70	22	0.93
14. The ability of the system to provide the important information for business decision- making	4.43	3.49	23	0.94
10. The ability of the system to generate the report according to the target and user requirements	4.65	3.70	24	0.95
8. The ability of the system to secure and correct the data effectively	4.27	3.25	25	1.02
5. The completeness of the data generated by the system.	4.56	3.52	26	1.04
30. Your understanding toward the usefulness of the system	4.01	2.87	27	1.14
31. Your understanding toward the way to use the system	4.13	2.96	28	1.17
4. The simplicity of the system to access	4.45	3.12	29	1.33
9. The sufficiency of the hardware and software to access to the system	4.10	2.61	30	1.49
28. The completeness of the working manual	4.29	2.76	31	1.52
27. The training before using the system	4.56	2.68	32	1.88
<b>All attributes average</b>	<b>4.16</b>	<b>3.38</b>		<b>0.78</b>



According to table 6.8, gap is determined by subtracting the mean score of performance from the mean score of expectation, smaller gap implies that more users' satisfaction of effectiveness in implementing Data Mart.

□ The top five rank of small gap

The top five rank of small gap can be arranged in order of size of gap; " The good attitude of the project staffs toward the users", " The project can be finished on time", " The staff's effort to develop the system", " The ability of the staffs to coordinate and communicate with users, and" The technical capabilities of the IT staff in the project" ranked number 1,2,3,4,and 5 respectively with size of gap, 0.10, 0.20, 0.25, 0.35, and 0.40 respectively. Obviously, all attributes in the top five rank of small gap are in the group of quality of project team or question 21-25 of questionnaire.

□ The top five rank of big gap

The top five rank of big gap can be arranged in order of size of gap;" The training before using the system, " The completeness of the working manual, " The sufficiency of the hardware and software to access to the system", " The simplicity of the system to access", and" The understanding of the users toward the way to use the system" ranked number 32,31,30,29,and 28 respectively with size of gap, 1.88, 1.52, 1.49, 1.33, and 1.17 respectively.

To visualize the gaps between the expectation and performance, a modified snake diagram is shown in Figure 6.6. The modified snake diagram highlights the score for both sets of mean scores on the same axis as well as a graph of the gaps.

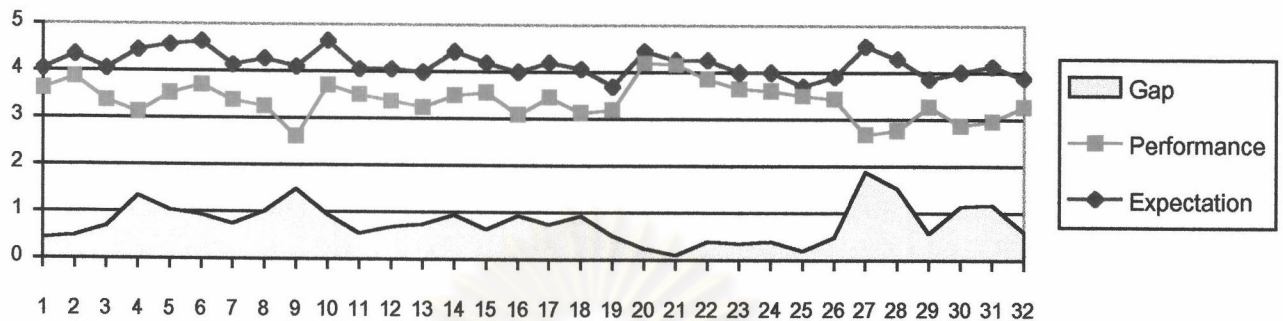


Figure 6.6: The gap between expectation and performance perceptions of all attributes

#### 6.4.2.4 The Mean Score of Performance by Groups of Attribute

In order to compare performance in each group of question, the mean score of performance in this part is divided into 4 groups.

To visualize the data in each group of attribute, the modified snake diagrams and radar charts are shown.

##### □ Group 1: System Performance

Table 6.9: the mean score of expectation and performance in the group of system performance

Question	Expectation	Performance	Gap
1. Up-to-dateness of Software (Microsoft Excel )	4.04	3.61	0.43
2. The ability of the system to adapt /change the format of the report	4.35	3.86	0.49
3. The quickness of the system to adapt /change the format of the report	4.05	3.36	0.69
4. The simplicity of the system to access	4.45	3.12	1.33
5. The completeness of the data generated by the system	4.56	3.52	1.04
6. The precise of the data generated by the system	4.63	3.70	0.93
7. The low level of downtime of the system	4.13	3.38	0.75
8. The ability of the system to secure and correct the data effectively	4.27	3.25	1.02
9. The sufficiency of the hardware and software to access to the system	4.10	2.61	1.49
10. The ability of the system to generate the report according to the target and user requirements	4.65	3.70	0.95
11. The ability of the system to extend the scope and support the upcoming system in the future	4.05	3.50	0.55
All attributes average	4.30	3.42	0.88

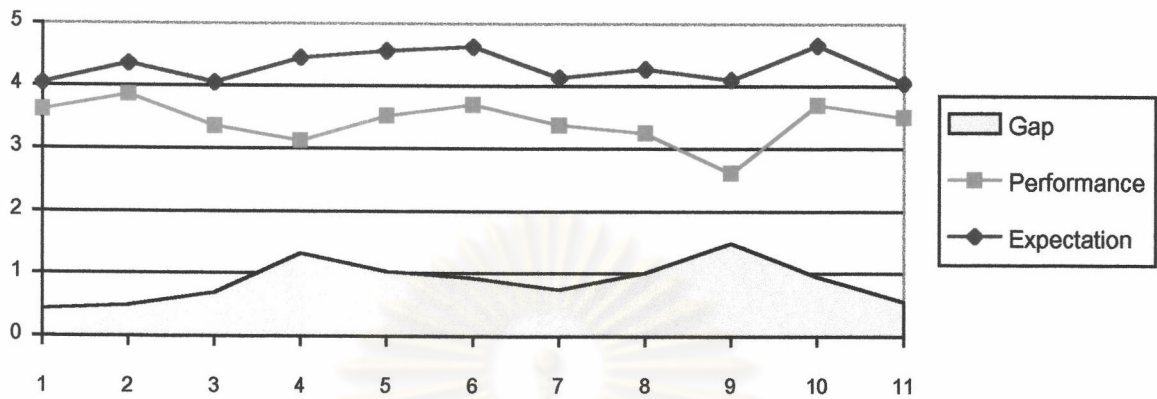


Figure 6.7: The modified snake diagram of the mean score of expectation and performance in the group of system performance



Figure 6.8: The radar chart of the mean score of expectation and performance in the group of system performance

The all attributes average of expectation and performance in the group of system performance is 4.30 and 3.42 respectively and gap between all attributes average of expectation and performance of the group is 0.88. The all attributes average of expectation of this group, 4.30, is highest comparing with other groups.

“The ability of the system to change the format of the report” is highest mean score on performance in this group, 3.86 with gap of 0.49 and “The sufficiency of hardware and

software to access to the system" is lowest mean score on performance in this group, 2.61, with gap of 1.49.

□ **Group 2: The Ability of The System to Develop The Organization**

Table 6.10: the mean score of expectation and performance in the group of the ability of the system to develop the organization

Question	Expectation	Performance	Gap
12. The ability of the system to response to the organization's need and the organizational strategies	4.05	3.36	0.69
13. The ability of the system to increase the employees' productivity	3.98	3.24	0.74
14. The system can provide the important information for business decision - making	4.43	3.49	0.94
15. The ability of the system to reduce the working period	4.19	3.55	0.64
16. The ability of the system to explore more opportunities to generate more organizational profit	4.00	3.08	0.92
17. The ability of the system to collect and maintain the Organizational Knowledge	4.20	3.45	0.75
18. The ability of the system to reduce the overall organizational cost	4.06	3.13	0.93
19. The ability of the system to support CRM (Customer Relationship Management)	3.69	3.18	0.51
Total	32.60	26.48	6.12
All attributes Average	4.07	3.31	0.76

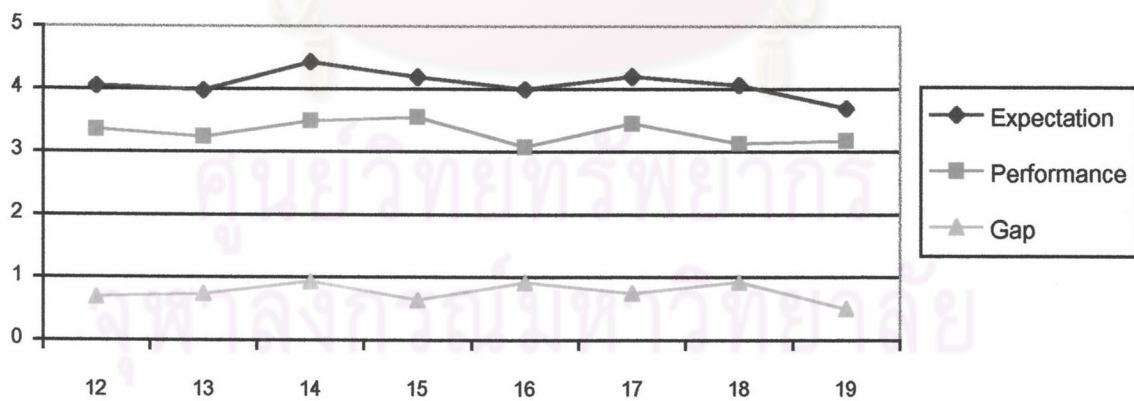


Figure 6.9: The modified snake diagram of the mean score of expectation and performance in the group of the ability of the system to develop the organization

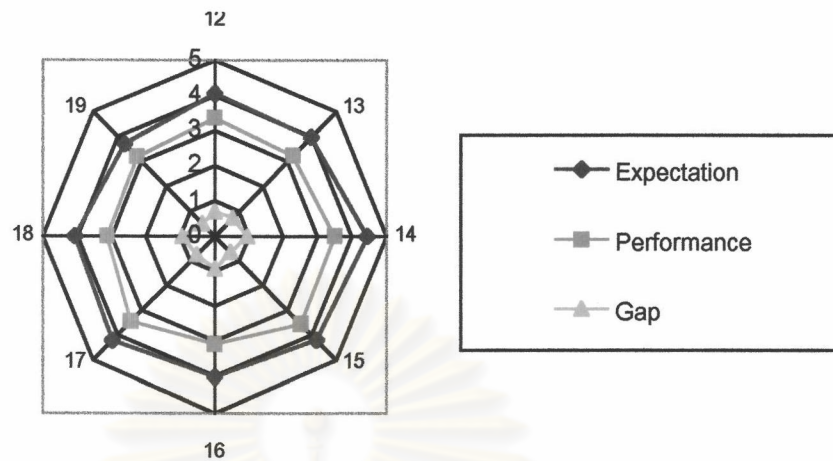


Figure 6.10: The radar chart of the mean score of expectation and performance in the group of the ability of the system to develop the organization

The all attributes average of expectation and performance in the group of the ability of the system to develop the organization is 4.07 and 3.31 respectively and gap between all attributes average of expectation and performance of the group is 0.76. The all attributes average of expectation of this group is lowest comparing other groups.

“The ability of the system to reduce the working period” is highest mean score on performance in this group, 3.55 with gap of 0.64 and “The ability of the system to explore more opportunities to generate more organizational profit” is lowest mean score on performance in this group, 3.08, with gap of 0.92.

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□ Group 3: The Quality of Project's Staffs

Table 6.11: the mean score of expectation and performance in the group of the quality of projects staffs

Question	Expectation	Performance	Gap
20. The staffs effort to develop the system	4.45	4.20	0.25
21. The good attitude of the project staffs toward the users	4.25	4.15	0.10
22. The technical capabilities of the IT staffs in the projects	4.25	3.85	0.40
23. The ability of the staffs to coordinate and communicate with the users	4.00	3.65	0.35
24. The appropriateness of the project implementation steps	4.00	3.60	0.40
25. The project can be finished on time	3.70	3.50	0.20
Total	24.65	22.95	1.70
All attributes average	4.11	3.83	0.28

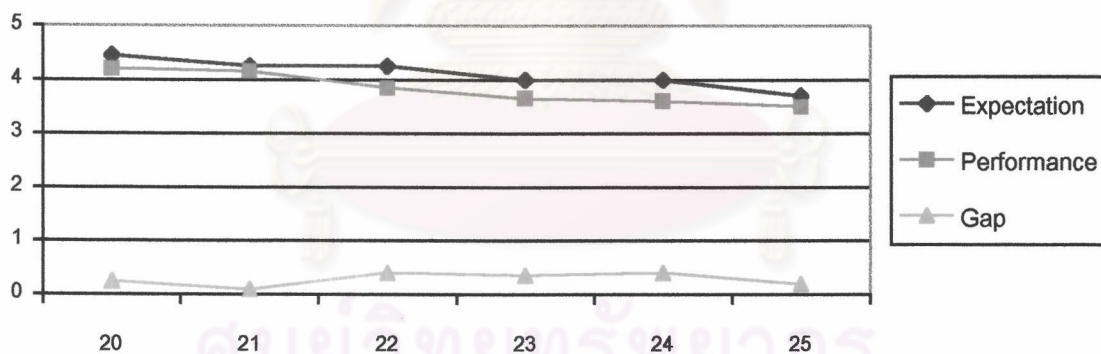


Figure 6.11: The modified snake diagram of the mean score of expectation and performance in the group of the quality of project's staffs

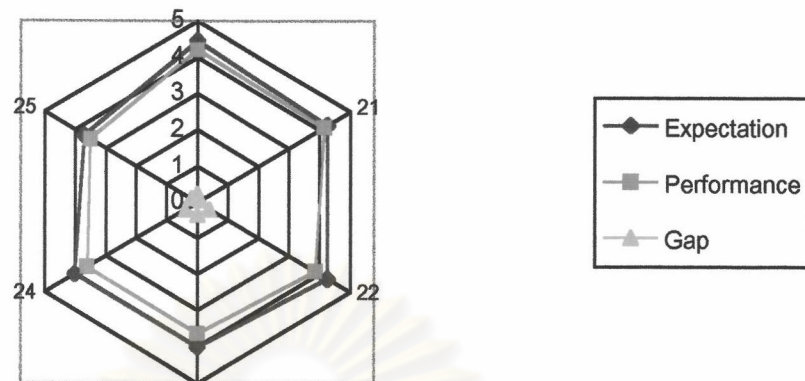


Figure 6.12: The radar chart of the mean score of expectation and performance in the group of the quality of project's staffs

The all attributes average of expectation and performance in the group of the quality of project's staffs is 4.11 and 3.83 respectively and gap between all attributes average of expectation and performance of the group is 0.28. The all attributes average of performance in this group is highest comparing the other groups, 3.83 and gap between all attributes average of expectation and performance of the group is also lowest comparing the other groups, 0.28.

"The staffs' effort to develop the system" is highest mean score on performance in this group, 4.20 with gap of 0.25 and "The project can be finished on time" is lowest mean score on performance in this group, 3.50, with gap of 0.20.

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□ Group 4: Others

Table 6.12: the mean score of expectation and performance in the group of others

Question	Expectation	Performance	Gap
26. The involvement of the users to share and present their ideas towards the project	3.90	3.43	0.48
27. The training before using the system	4.56	2.68	1.88
28. The completeness of the working manual	4.29	2.76	1.52
29. The confident of the users toward the systems	3.86	3.27	0.58
30. The understanding of the users toward the usefulness of the system	4.01	2.87	1.14
31. The understanding of the users toward the way to use the system	4.13	2.96	1.17
32. The feeling of the users to use the system	3.88	3.27	0.61
Total	28.63	21.25	7.38
All attributes average	4.09	3.04	1.05

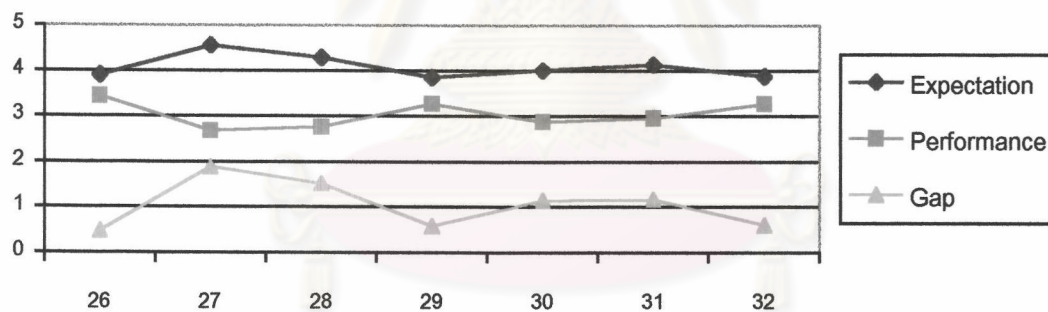


Figure 6.13: The modified snake diagram of the mean score of expectation and performance in the group of others



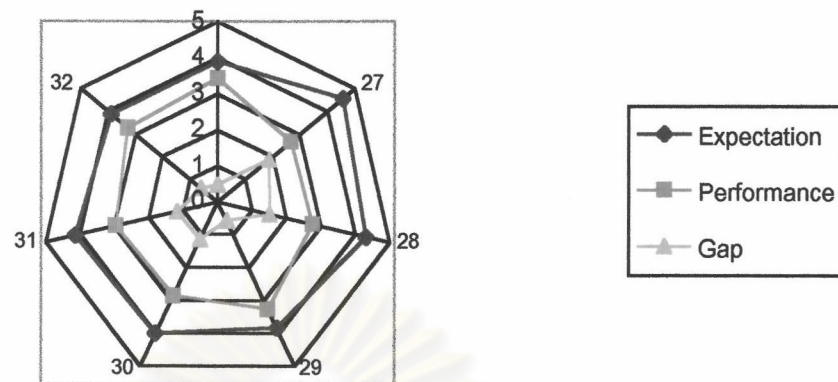


Figure 6.14: The radar chart of the mean score of expectation and performance in the group of others

The all attributes average of expectation and performance in the group of others is 4.09 and 3.04 respectively and gap between all attributes average of expectation and performance of the group is 1.05. The all attributes average of performance of the group is lowest comparing with other groups.

“The involvement of the users to share and present their ideas toward the project” is highest mean score on performance in this group, 3.43 with gap of 0.48 and “The training before using the system” is lowest mean score on performance in this group, 2.68, with gap of 1.05.

#### 6.4.3: Users' Satisfaction on the Report Format by Department

In this part, the results of questionnaire, part 4, users' satisfaction on the reports proceed by Data Mart are presented. The results are shown the number of both respondents that use Traditional way and the Data Mart to create the report and also mean score of satisfaction that is rated from only respondents who use the Data Mart to create the reports. The results are presented separately by department. Not all respondents do this part, some of them skip this part so the number of respondents in this part don't come from all respondents as following below.

### □ Cement department

Users' satisfaction of cement business department on the report format is shown as table 6.13

Table 6.13: The mean score of users' satisfaction in Cement department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Cement export statics	4.10	10	0	10
2. Monthly sales performance	4.20	10	5	5
3. Top ten cement customer	4.10	10	0	10
4. Cement budget	4.25	10	4	6
5. Cement export statistic by region	3.50	10	0	10
6. A/R, inventory value by month	3.10	10	0	10
7. Monthly report	3.50	10	7	3
All average	3.82			

According to Table 6.13, the all average of users' satisfaction on report format in Cement department is 3.82.

The mean score of users' satisfaction on the report; "Cement export statistics", "Monthly sales performance", "Top ten cement customer", "Cement budget", "Cement export statistic by region", "A/R inventory value by month", and "Monthly report" is 4.10, 4.20, 4.10, 4.25, 3.50, 3.10, and 3.50 respectively.

"Cement budget" is the highest users' satisfaction of report provided by Data Mart, with a mean score of 4.25 and "A/R inventory value by month" is the lowest users' satisfaction of report provided by Data Mart with a mean score of 3.10.

"Monthly report" is the report that the most of users uses the traditional way to create the report, 7 persons from total respondents of 10 persons. "Monthly sales

performance” is the report that the second most of users uses the traditional way to create the report, 5 persons from total respondents of 10 persons.

All of 10 respondents use Data Mart to create “Cement export statistics”, “Top ten cement customer”, Cement export statistic by region, and “A/R inventory value by month”.

#### □ General Merchandize department

Users' satisfaction of General Merchandize department on the report format is shown as table 6.14

Table 6.14: The mean score of users' satisfaction in General Merchandize department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Sales performance	3.67	5	2	3
2. Sales Performance of specific product in specific country	3.40	5	0	5
3. Sales turnover performance	3.20	5	0	5
4. Income performance	3.00	5	0	5
5. Sales budget	3.50	5	3	2
All average	3.35			

According to Table 6.14, the all average of users' satisfaction on report format in General Merchandize is 3.35.

The mean score of users' satisfaction on report of “Sales performance”, “Sales performance of specific product in specific country”, “Sales turnover performance”, “Income performance”, and “Sales budget” is 3.67, 3.40, 3.20, 3.00, and 3.50 respectively.

“Sales performance” is the highest users' satisfaction of report provided by Data Mart, with a mean score of 3.67 and “Income performance” is the lowest users' satisfaction of report provided by Data Mart with a mean score of 3.00.

“ Sales budget” is the report that the most of users uses the traditional way to create the report, 3 persons from total respondents of 5 persons. “ Sales performance” is the report that the second most of users uses the traditional way to create the report, 2 persons from total respondents of 5 persons.

All of 5 respondents use Data Mart to create “ Sales performance of specific product in specific country”, “ Sales turnover performance”, and” Income performance”.

#### □ Building Material department

Users' satisfaction of Building Material department on the report format is shown as Table 6.15

Table 6.15: The mean score of users' satisfaction in Building material department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Sale performance by product	3.44	9	0	9
2. Sale performance by country	3.75	9	1	8
3. Gypsum sales volume by country	3.40	9	4	5
4. Analytical report	3.88	9	1	8
5. Monthly sales report to supplier	3.89	9	0	9
6. Gypsum board export sale	3.80	9	4	5
7. Monthly export sales report by country by size	3.78	9	0	9
All average	3.71			

According to Table 6.15, the all average of users' satisfaction on report format in Building material department is 3.71.

The mean score of users' satisfaction on the report of “ Sales performance by product”, “ Sales performance by country”, “ Gypsum sales volume by country”, “ Analytical report”, “ Monthly sales report to supplier”, “ Gypsum board export sale”, “ Monthly export sales report by size” is 3.44, 3.75, 3.40, 3.88, 3.89, 3.80, and 3.78 respectively.

“Monthly sales report to supplier” is the highest users’ satisfaction of report provided by Data Mart, with a mean score of 3.89 and “Gypsum sales volume by country” is the lowest users’ satisfaction of report provided by Data Mart with a mean score of 3.40.

“Gypsum sales volume by country” and “Gypsum board export sale” are the report that the most of users uses the traditional way to create the report, 4 persons from total respondents of 9 persons. “Sales performance by country” and “Analytical report” are the report that the second most of users uses the traditional way to create the report, 1 persons from total respondents of 9 persons.

All of 9 respondents use Data Mart to create “Sale performance by product”, “Monthly sales report to supplier”, and “Monthly export sales report by country by size”.

#### □ Industrial Products department

Users’ satisfaction of Industrial Products department on the report format is shown as Table 6.16

Table 6.16: The mean score of users’ satisfaction in Industrial products department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Sales commission	3.25	8	0	8
2. Purchase order conclude	3.50	8	0	8
3. Sales performance	3.67	8	5	3
4. Sales performance of non-SCG product	2.88	8	0	8
5. Sales performance of specific product in specific country	3.63	8	0	8
6. Sales budget	4.00	8	5	3
All average	3.49			

According to Table 6.16, the all average of users’ satisfaction on report format in Building material department is 3.49.

The mean score of users' satisfaction on the report of "Sales commission", "Purchase order conclude", "Sales performance", "Sales performance on non-SCG product", "Sales performance of specific product in specific country", and "Sales budget" is 3.25, 3.50, 3.67, 2.88, 3.63, and 4.00 respectively.

"Cement budget" is the highest users' satisfaction of report provided by Data Mart, with a mean score of 4.00 and "Sales performance on non-SCG product" is the lowest users' satisfaction of report provided by Data Mart with a mean score of 2.88.

"Sales performance" and "Sales budget" are the report that the most of users uses the traditional way to create the report, 5 persons from total respondents of 8 persons.

All of 8 respondents use Data Mart to of "Sales commission", "Purchase order conclude", "Sales performance on non-SCG product", and "Sales performance of specific product in specific country".

#### □ Pulp and Paper department

Users' satisfaction of Pulp and Paper department on the report format is shown as

Table 6.17

Table 6.17: The mean score of users' satisfaction in Pulp and Paper department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Sales turnover performance	3.00	2	0	2
2. Turnover by product	3.50	2	0	2
3. Order conclude by customer	3.50	2	0	2
4. Order conclude by supplier	4.00	2	0	2
5. Conclude quantity and shipped quantity by product	3.50	2	0	2
6. Sales budget	3.00	2	0	2
All average	3.42			

According to Table 6.17, the all average of users' satisfaction on report format in Pulp and Paper department is 3.42.

The mean score of users' satisfaction on the report of "Sales turnover performance", "Turnover by product", "Order conclude by customer", "Order concludes by supplier", "Conclude quantity and shipped quantity by product", and "Sales budget" is 3.00, 3.50, 3.50, 4.00, 3.50, and 3.00 respectively.

"Order conclude by supplier" is the highest users' satisfaction of report provided by Data Mart, with a mean score of 4.00 and "Sales turnover performance" and "Sales budget" are the lowest users' satisfaction of report provided by Data Mart with a mean score of 3.00.

No respondents in this department use traditional way to create the reports.

#### □ Energy department

Users' satisfaction of General Merchandize department on the report format is shown as Table 6.18

Table 6.18: The mean score of users' satisfaction in General Merchandize department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Sales performance	3.25	4	0	4
2. Sales turnover performance	4.00	4	2	2
3. Income performance	3.50	4	0	4
4. Pet Coke volume shipped to specific plant /customer	3.00	4	3	1
All average	3.44			

According to Table 6.18, the all average of users' satisfaction on report format in Energy department is 3.44.

The mean score of users' satisfaction on the report of "Monthly report to business division manager- Sales performance", "Sales turnover performance", "Income performance", and "Pet coke volume shipped to specific plant/customer" is 3.25, 4.00, 3.50, and 3.00 respectively.

“Sales turnover performance” is the highest users’ satisfaction of report provided by Data Mart, with a mean score of 4.00 and “Pet coke volume shipped to specific plant/customer” is the lowest users’ satisfaction of report provided by Data Mart with a mean score of 3.00.

“Pet coke volume shipped to specific plant/customer” is the report that the most of users uses the traditional way to create the report, 3 persons from total respondents of 4 persons. “ Sale turnover performance” is the report that the second most of users uses the traditional way to create the report, 1 persons from total respondents of 4 persons.

All of 4 respondents use Data Mart to create “ Sales performance” and “ Turnover performance”.

#### □ Plastic and Chemical department

Users’ satisfaction of Plastic and Chemical department on the report format is shown as Table 6.19

Table 6.19: The mean score of users’ satisfaction in Plastic and chemical department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Sales by grade	3.00	4	2	2
2. Sales by grade in specific country	3.25	4	0	4
3. Sales by budget	3.33	4	1	3
4. Export volume of specific product to specific country	3.50	4	0	4
5. Export volume by customer	3.50	4	0	4
6. Sales budget	3.75	4	0	4
All average	3.39			

According to Table 6.19, the all average of users’ satisfaction on report format in Plastic and chemical department is 3.39.



The mean score of users' satisfaction on the report of "Sales by grade", " Sales by grade in specific country", " sales by budget", " Export volume of specific product to specific country", " Export volume by customer", and " Sales budget" is 3.00, 3.25, 3.33, 3.50, 3.50, and 3.75 respectively.

"Sales budget" is the highest users' satisfaction of report provided by Data Mart, with a mean score of 3.75 and "Sale by grade" is the lowest users' satisfaction of report provided by Data Mart with a mean score of 3.00.

" Sale by grade" is the report that the most of users uses the traditional way to create the report, 2 persons from total respondents of 4 persons. " Sales by budget" is the report that the second most of users uses the traditional way to create the report, 1 persons from total respondents of 4 persons.

All of 4 respondents use Data Mart to create " Sales by grade in specific country", " Export volume of specific product to specific country", " Export volume by customer", and " Sales budget".

#### □ Aluminum department

Users' satisfaction of Aluminum department on the report format is shown as Table 6.20

Table 6.20: The mean score of users' satisfaction in Aluminum department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Sales performance	3.00	5	0	5
2. Sales performance of specific product by business practical	3.20	5	0	5
3. Sales performance	3.33	5	2	3
4. Sales budget	3.50	5	3	2
All average	3.26			

According to Table 6.20, the all average of users' satisfaction on report format in Aluminum department is 3.26.

The mean score of users' satisfaction on the report of "Sales performance", "Sales performance of specific product by business practical", "Sales performance", and "Sales budget" is 3.00, 3.20, 3.33, and 3.50 respectively.

"Sales budget" is the highest users' satisfaction of report provided by Data Mart, with a mean score of 3.50 and "Sales performance" is the lowest users' satisfaction of report provided by Data Mart with a mean score of 3.00.

"Sales budget" is the report that the most of users uses the traditional way to create the report, 3 persons from total respondents of 5 persons. "Sales performance" is the report that the second most of users uses the traditional way to create the report, 2 persons from total respondents of 5 persons.

All of 5 respondents use Data Mart to create "Sales by grade" and "Sales by grade in specific country".

#### □ Steel Products department

Users' satisfaction of Steel Products department on the report format is shown as

Table 6.21

Table 6.21: The mean score of users' satisfaction in Steel products department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Overdue A/R aging analysis by SCG customer	3.40	5	0	5
2. Sales budget	3.00	5	3	2
All average	3.20			

According to Table 6.21, the all average of users' satisfaction on report format in Steel products department is 3.20.

The mean score of users' satisfaction on the report of "Overdue A/R aging analysis by SCG customer" and "Sales budget" is 3.40 and 3.00 respectively.

"Overdue A/R aging analysis by SCG (Siam Cement Group)" is the highest users' satisfaction of report provided by Data Mart, with a mean score of 3.40.

"Sales budget" is the report that the most of users uses the traditional way to create the report, 3 persons from total respondents of 5 persons.

All of 5 respondents use Data Mart to create "Overdue A/R aging analysis by SCG."

#### □ International Sourcing department

Users' satisfaction of International Sourcing department on the report format is shown as Table 6.22

Table 6.22: The mean score of users' satisfaction in International sourcing department

Report	Mean	Total of respondents	Traditional way	Data Mart
1. Monthly sales department	3.50	4	0	4
2. Monthly performance by customer	3.75	4	0	4
3. Monthly highlight	3.25	4	0	4
All average	3.50			

According to Table 6.22, the all average of users' satisfaction on report format in International sourcing department is 3.50.

The mean score of users' satisfaction on the report of "Monthly sales report", "Monthly performance by customer", and " Monthly highlight" is 3.50, 3.75, and 3.25 respectively.

"Monthly performance by customer" is the highest users' satisfaction of report provided by Data Mart, with a mean score of 3.75 and "Monthly highlight" is the lowest users' satisfaction of report provided by Data Mart with a mean score of 3.25.

No respondents in this department use traditional way to create the reports

#### **6.4.4 Overall Users' Attitude on Implementation Effectiveness of Data Mart Project**

The result of first question of part 5, the overall users' attitude on implementation effectiveness of Data Mart project is 3.68. It is arisen from average of overall performance of implementing Data Mart project rated by 84 respondents.

#### **6.4.5 Comments and Suggestions**

In this part, comments and suggestions of respondents that collected from second question of part 5 are grouped to Table 6.23. There are 45 respondents from total respondents of 84 give comments and suggestions. Some of respondents give comments and suggestions more than one topic.

Table 6.23: The summary of comments and suggestions of respondents

Comments and suggestions	Rank	Number of comments
1. Should have periodic training of using the Data Mart to users	1	16
2. Should increase more facilities and computers to access the Data Mart	2	8
3. Many users have not understood using Data Mart; as a result, traditional way has still been used to create reports	3	7
4. Don't know what is usefulness of Data Mart and don't know what the Data Mart can do	3	7
5. Should have a manual that contains a lot of details and examples more than the existing one	3	7
6. Should have good announcement to persuade users to use Data Mart instead of traditional way ;such as, SAP	6	6
7. Should create the ready format of all reports for users	7	3
8. Should periodically review the outcome of Data Mart to revise and solve the problems	7	3
9. Update the requirements of users periodically	9	2
10. Improve processes of using the Data Mart to be easier	9	2
11. Should periodically check and test the correction of data in order to increase the users' confidence on the Data Mart	11	1
12. Should have a center to help the users to solve the problems	11	1
13. Should inform the users in case that Data Mart has the problems	11	1
Total		64

According to Table 6.23, the most number of comments and suggestions, 16 respondents, is on topic "Should have periodic training of using Data Mart to user". The second most of number of comments and suggestions, 8 respondents, is on the topic "Should increase more facilities and computers to access the Data Mart". The third most of number of comments and suggestions, 7 respondents, are on 3 topics; " Many users have not understood using the Data Mart; as a results, traditional way has still not been used to create the report", " Don't know what is usefulness of Data Mart and don't know what the Data Mart can do", and "Should have a manual that contains a lot of details and examples more than the existing one".

## 6.5 The Conclusion of Evaluation

### □ The results of questionnaire in part1

According to the results of questionnaire in part1, the most of respondents is in the level of Supervisor with number of 63 persons or 75 % of all respondents and 48.81% of all respondents are in Cement business department, Building material department, Industrial product department with number of 17 persons, 14 persons, and 10 person respectively. The most of respondents, 32 persons or 38.10%, uses the Data Mart 2-3 times a month and 22 persons or 26.19 % use the Data Mart 2-3 times a week, and 11 persons or 20.24% use the Data Mart less than 1 time a month. 83 persons or 98.81% of respondents are familiar with using Personal Computer in level of Average to Expect and only 1 person or 1.19% of respondent is in the level of Below Average. The most of respondents, 32 persons or 38.10% of all respondents, occasionally accesses the Data Mart by their own, occasionally others access for them and the second most of respondents, 31 persons or 36.90%, others access the Data Mart for them.

### □ The results of questionnaire in part2 and3

According to the results of questionnaire in part2 and3, all attributes average in term of expectation is 4.16. There are 26 attributes that the mean score on expectation more than 4.00 and only 6 attributes which the mean score on expectation less than 4.00 that shows the level of expectation of the Data Mart 's users is very high on the effectiveness of implementation. All attributes average in term of performance perceptions is 3.38 that show the level of performance across all attributes are between neutral and good with gap from expectation of 0.78. As the results of questionnaire on expectation and performance perceptions, there is no attribute that performance is more than expectation so it shows that all of attributes are underperformed. It may be concluded from this study that considerable amount of attention and funds need to allocate to this Data Mart project. However, as

noticed from the results of the questionnaire, users may have too high expectation on the project 's implementation effectiveness.

There are some attributes that the users expect on high level but performance perceptions are quite low. Firstly the training before using the system was ranked third in term of expectation but thirtieth on performance with the mean score of 4.56 and 2.68 respectively. Obviously the users are not satisfied on the training course of the project. This data is also supported with the comments and suggestions in part 5 of the questionnaire. The most of respondents, 16 respondents, comments that training of using the Data Mart should be arranged periodically.

Secondly the completeness of the working manual was ranked ninth in term of expectation but thirtieth on performance with the mean score of 4.29 and 2.76 respectively. Thirdly, the understanding of the users toward the way to use the system was ranked fifteenth in term of expectation but twenty-eight on performance with the mean score of 4.13 and 2.96 respectively. These both may be the reasons that make some users would not use the Data Mart because they don't understand the way to use the Data Mart and don't know what it can do for them. These also are supported with comments and suggestions in part 5 of questionnaire. There are 3 topics that were ranked third from 7 respondents; Many users have not understand using the Data Mart, they don't know what is usefulness of the Data Mart and don't know what the Data Mart can do, and they think that should have a manual that contains a lot of details and examples more than the existing one.

Finally, The sufficiency of the hardware and software to access to the system was ranked seventeenth in term of expectation but thirty-second on performance with the mean score of 4.10 and 2.61 respectively. According to the data, users want the project to increase more hardware and software to access the Data Mart since at the present there are not enough computers to access the Data Mart so some users who are inconvenient to use the Data Mart by other computers still create the reports by traditional way. This also is

supported with comments and suggestions from part 5 of questionnaire. There are 8 respondents comment that should increase more facilities and computers to access the Data Mart.

All top five ranks of high score in term of performance perceptions of users are in the group of the quality of project's staffs and the attributes in this group are also the top five rank of small gap are "The good attitude of the project staffs toward the users", " The project can be finished on time", " The staff's effort to develop the system", " The ability of the staffs to coordinate and communicate with users", and "The technical capabilities of the IT staff in the project". The clause makes these attributes have low gap because not only users are not quit high expect on them but also they perform very high performance. It shows project's staffs are very high quality on technical capabilities, the abilities of coordination and communication with users during implementation, effort on project implementation, attitude toward the users, and time management.

When attributes are considered by group, it is found that the attributes in group of System performance are expected from users at the highest expectation and the attributes in group of The ability of system to develop the organization are expected from users at the lowest expectation when comparing with other groups with all attributes mean score of 4.30 and 4.07 respectively. It shows that most of users want the project have good performance of system and think that it is very important on effectiveness of project but they think that the ability of the system to develop the organization is the least important on effectiveness of the project.

It is found that the attributes in the group of Others are performed at the lowest performance with the mean score of 3.04. This group performs the lowest performance because most of attributes in this group are very low performance. There are 4 attributes of all 6 attributes that the mean score are lower than 3.00; The training before using the system, The completeness of the working manual, The understanding of the users toward



the usefulness of the system, and The understanding of the users toward the way to use the system with the mean score of 2.68, 2.76, 2.87, and 2.96 respectively.

□ The results of questionnaire in part 4

According to the results of questionnaire in part 4, all average score of the users' satisfaction on the report format of each department is between 3.00-4.00. It shows that the level of satisfaction of users in each department is between Fair and Satisfied. There are many users don't want to use the Data Mart to create the report because they have still not understood the using the Data Mart and think that Data Mart is too complicate and not convenient to create the report that these reasons like as the comments in the part 5 of the questionnaires. But there are some reports that most of users still use SAP to create the report since they feel more familiar with using SAP and the capability of SAP can create these kind of report as same as Data Mart. Those report are, Sales performance and Sales budgets report.