

CHAPTER 4

RESEARCH RESULTS

This chapter presents the survey results in four major parts. The characteristics of respondents are presented first. Then the investigation results of dimensionality of service quality and its correlation to customer satisfaction and likelihood to repurchase is presented. Followed by the results customer perceived quality on competing brands are shown. Lastly, study on characteristics of high and low satisfaction customers is presented.

CHARACTERISTICS OF RESPONDENTS

The characteristics of respondents is analyzed on three different basis: Company, User, and Copier.

1) Characteristics of Respondents Companies

Brands

Out of 108 responses, majority come from users of two leading brands: Xerox and Canon which constitutes total of 70% of

responses. This is followed by two other brands: Ricoh and Minolta, each with more than 10% of responses.(refer to Table 4.1)

TABLE 4.1: CHARACTERISTICS OF RESPONDENT COMPANIES

Brand	Frequency	Percent
Xerox	38	35.2
Canon	38	35.2
Ricoh	14	13.0
Toshiba	2	1.9
Minolta	11	10.2
Konica	1	0.9
Sharp	4	3.7
Total	108	100.0

Company Size	Frequency	Percentage
below 100	50	46.3
101 - 500	25	23.1
501 - 2,000	11	10.2
more than 2,000	22	20.4
Total	108	100.0

Paid up capital	Frequency	Percentage
Less than RM 1 million	26	29.2
RM 1 to 10 million	23	25.8
RM 11 to 50 million	10	11.2
RM 51 to 100 million	9	10.1
more than 101 million	21	23.6
Total	89	100.0

Company Size & Industry

More than two-thirds of the respondents are from smaller companies with less than 500 employees. Another 20% were from bigger companies with more than 2000 employees.

78% of the firms with less than 100 employees are in service sectors, but most of biggest firms were in manufacturing industry (27%), utilities/telecommunications (27%) and financial services (22%). Table 4.2 is created to show the breakdown of industry type versus number of employees, one of the respondent from 101-500 employees company category did not indicate the industry type.

TABLE 4.2: CROSS TABULATION OF INDUSTRY WITH COMPANY SIZE

Type of industry	No. of employees				Total
	below 100	101 - 500	501 - 2,000	above 2,000	
Agriculture	1				1
Petroleum/mining	2	2			4
Manufacturing	5	8	6	6	25
Retail/distribution	8	6	1	1	16
Financial	6		1	5	12
Utilities/Telecommuni cations	1	1	2	6	10
Professional services	14	3	1		18
Government	3	2			7
Other services	10	2		2	14
Total	50	24	11	22	107

Paid up Capital

Similar to the analysis of company size, the majority of companies are either less than RM 10 millions or more than RM 101 millions. 19 respondents didn't report on paid up capital.

2) Characteristics of Respondents

Relationship to the copier

The majority of respondents are users of copiers (70.4%) as compared to key operators and Decision maker. Four respondents did not indicated their positions.

Sex

More than 60% of the respondents are male.

Age

Majority of the respondents are in the age range of 26 to 45, which reflects the age of normal office workers.

Experience with Copier

Majority of the respondents have more than 1 year of experience with copier (81%).

Education level

The majority of respondents are holding a degree or possess professional qualification (72.6%). This indicates the respondents may hold executives or higher positions in the

TABLE 4.3: CHARACTERISTICS OF RESPONDENTS

Relationship to Copier	Frequency	Percentage
Key Operator	12	11.2
Decision Maker	19	17.8
User	76	71.0
Total	107	100.0

Sex	Frequency	Percentage
Male	70	64.8
Female	38	35.2
Total	108	100.0

Age	Frequency	Percentage
Below 25	18	16.7
26 to 35	51	47.2
36 to 45	31	28.7
46 to 55	6	5.6
above 55	2	1.9
Total	108	100.0

Experience	Frequency	Percentage
Less than 1 year	20	18.5
1 - 5 years	54	50.0
6 - 10 years	19	17.6
above 10 years	15	13.9
Total	108	100.0

company. A table with breakdowns of education level versus type of respondents confirms that most key operators are SPM level or lower, however most decision makers are degree holders.

TABLE 4.4: CROSS TABULATION OF EDUCATION LEVEL WITH TYPES OF RESPONDENTS

Education Level	Type of respondents			Total	Percent
	Key operator	Decision maker	User		
SPR/LCE			2	2	1.9
SPM/MCE	7	1	7	15	14.3
STPM/Certificate /Diploma	4		7	11	10.5
Degree/Prof. Qualification	1	18	58	77	73.3

3) Characteristics of Copier

Speed of Copier

Majority of the copier were in the range of below 60 copies per minute, which constitute the low and medium volume copiers. This reflects the market conditions that most copiers are within this range. As the speed of copying in terms of prints per minute (PPM) increases, the value of machine also increases. Only large firms are capable to purchase high speed copiers. 14 respondents did not indicate copier type.

TABLE 4.5: CHARACTERISTICS OF COPIER

Speed of Copier	Frequency	Percentage
Less than 30 PPM	27	28.7
31 - 60 PPM	47	50.0
61 - 90 PPM	15	16.0
more than 91 PPM	5	5.3
Total	94	100.0

Year in use	Frequency	Percentage
Less than 1 year	16	15.2
1 - 3 years	65	61.9
4 - 6 years	16	15.2
7 - 10 years	6	5.7
Above 10 years	2	1.9
Total	105	100.0

Number of copier	Frequency	Percentage
1 - 2 copiers	70	69.3
3 - 5 copiers	16	15.8
more than 5 copiers	15	14.9
missing data	7	
Total	108	100.0

No. of User	Frequency	Percentage
1 - 5 users	14	13.0
6 - 10 users	15	13.9
11 - 15 users	6	5.6
16 and above	73	67.6
Total	108	100.0

Year of Machine in Use

Biggest group of machine are between 1 to 3 years in use. Less than 10% of total respondents are using 7 years old or older machine. 3 respondents did not provide the information.

Number of Copiers in the Office

Most respondents indicated that they have less than 3 copiers in the office, making the availability of the copier more urgent than office with 3 or more copiers, of which could rely on other copiers when one breaks down.

Number of Users per Copier

Majority of the respondents' copier have more 16 or more users, indicating the urgency of service when one breaks down, at least 16 employees' productivity will be affected. Combining with the fact that only one or two copiers in the whole office, once copier breaks down, the documentation flow in the office may be seriously affected.

SERVQUAL DIMENSIONS

The dimensionality of both SERVQUAL and SERVPERF scale are investigated, but first we investigate whether the results of this study will form 5 dimensions identified by Parasuraman et al. (1988) in their development of SERVQUAL scale. The SERVQUAL scale is defined as the gap between customer expected quality (E) and customer perceived quality (P), it is computed using below formula and is termed as Q:

$$Q = \text{Perceived (P)} - \text{Expectation (E)}$$

A factor analysis of the SERVQUAL scale using VARIMAX rotation procedure in SPSS-X. Three factors exist with eigenvalue more than one, they explain 62% of the variances. The minimum acceptable factor loading is 0.5. As shown in Table 4.6, most of the items loaded in one factor, except items 1, 2 & 3.

SERVQUAL scale showed only three factors, where factor 3 has no item with factor loading more than 0.5. Also note that some items have high factor loading on two factors. Dropping factor 3 and considering only the two factors, they could be found to represent Service quality and Goods quality respectively. Factor 1 is representing overall Service quality and Factor 2 is representing Goods quality.

TABLE 4.6: VARIMAX ROTATE FACTOR TO MATRIX OF SERVQUAL SCALE

	Factor 1	Factor 2	Factor 3
Q1		.529	.469
Q2		.613	
Q3	.504	.526	
Q4	.534		
Q5	.557	.526	
Q6	.699		
Q7	.742		
Q8	.674		
Q9	.724		
Q10	.736		
Q11	.743		
Q12	.734		
Q13	.794		
Q14	.767		
Q15	.816		
Q16	.729		
Q17	.709		
Q18	.805		
Q19	.730		
Q20	.782		
Q21	.838		

Internal Reliability

The SERVQUAL scale was then tested for reliability within the factors. The results are shown in Table 4.7. The coefficient alpha for factor 1 (Overall Service Quality) is .9458, showing very high internal consistency within the factor. The alpha value for factor 2 is .6738, deleting Q1 will improve alpha from .6738 to .73.

TABLE 4.7: INTERNAL RELIABILITY COEFFICIENT OF SERVQUAL

Factor	Dimensions	Reliability Coefficient	Number of items
1	Services	.9458	18
2	Goods	.6738	3

The existence of only two factors confirms that SERVQUAL's 5 dimensions consistent and cannot be applied universally to all service industries(Dabholkar 1996). In this study, the 5 dimensions could not be identified for the Copier Service industry. Factor 1 is found to be the only dimension representing Service Quality. This results also confirms Taylor (1992)'s research results in finding the SERVQUAL scale to be one dimension. The total scale coefficient alpha is found to be .9396, showing good items to total consistency thus the scale could be treated as one dimensional. Thus in the rest of the study, the SERVQUAL scale is treated and analyzed as one dimension.

SERVPERF Dimensions

SERVPERF scale is defined as Customer Perceived qualities (P) alone. A factor analysis on SERVPERF scale using VARIMAX rotation yields 4 factors with Eigenvalue more than one.(Table 4.8) The four factors explains 70.5% of the total variance. Only items with factor loading more than 0.5 are indicated.

Out of the four factors, Factor 1 consists of 18 items, Factor 2 has two items, Factor 3 has no item with loading more than

0.5, and factor 4 only has a single item 8. The finding is similar to factor analysis results for SERVQUAL. This indicate that SERVPERF should be considered as one dimensional also.

TABLE 4.8: VARIMAX ROTATION FACTOR TO MATRIX OF SERVPERF

	Factor 1	Factor 2	Factor 3	Factor 4
P1		.678		
P2	.581	.626		
P3	.615	.555		
P4	.604			
P5	.600			
P6	.632			
P7	.687			
P8	.569			.642
P9	.753			
P10	.726			
P11	.755			
P12	.628			
P13	.850			
P14	.819			
P15	.834			
P16	.838			
P17	.735			
P18	.798			
P19	.734			
P20	.807			
P21	.844			

Reliability

Analyzing SERVPERF found service dimension has a high

coefficient alpha of .9481, suggesting a good internal consistency among items within the dimension.

TABLE 4.9: INTERNAL RELIABILITY COEFFICIENT FOR SERVPERF

Dimensions	Reliability Coefficient	Q items
Goods		q2
Billing		p8
Services	.9481	p3 to p7, p9 to p21

QUALITY, SATISFACTION AND REPURCHASE

The results below shows the relationship between *customer satisfaction* and *customer's likelihood to repurchase* as the study results attained from the questionnaire (refer to Appendix). The relationship between customer satisfaction and SERVQUAL scale, SERVPERF scale and perception of quality are also presented. SERVQUAL scale was represented by overall mean of all Gap (Q) items. SERVPERF scale is represented by overall mean of perceived (P) items.

Relationships Between Satisfaction, Repurchase, and Quality

The bivariate coefficient analysis shows results similar to Cronin & Taylor (1992) research study. *Satisfaction* has the highest correlation with *likelihood to repurchase* (.7901), compared with either product quality and service quality.

Service quality has a higher correlation coefficient to Satisfaction (.6007) than Product quality. When investigating the correlation of SERVPERF and SERVQUAL scales with Product and Service quality, it was found that Service quality has a higher correlation with SERVPERF (.4192) than SERVQUAL (.3402), indicating that SERVPERF is better in explaining the variation in Service quality. Both SERVPERF and SERVQUAL scales have similar correlation coefficient with Product quality.

TABLE 4.10: CORRELATION COEFFICIENT OF QUALITY, SATISFACTION & REPURCHASE

	SERV- PERF	SERV- QUAL	Product Quality	Service Quality	Satis- faction
SERVPERF					
SERVQUAL	.6138				
Prod. Quality	.5222	.5282			
Serv. Quality	.4192	.3402	.4952		
Satisfaction	.5933	.4468	.5829	.6007	
Repurchase	.4609	.4136	.6035	.4960	.7901

The above results confirm the findings of Cronin and Taylor (1992) that repurchase has more to do with satisfaction than quality. Consequently satisfaction is affected more by service quality than by product quality. The results also confirm that SERVPERF is superior than SERVQUAL in determining service quality.

To further confirm the relations between the key items, several stepwise regression analysis were done, each using different key item as the dependent variable, to test the

significance of the independent variable. In the stepwise analysis, the most significant variable will be shown first.

The regression analysis confirms the correlation findings, that Satisfaction is the major contributor to Repurchase. Referring to Table 4.11, Satisfaction is found to appeared as first item in the stepwise analysis, and it has significant value of .0000.

Table 4.12 showing the stepwise regression analysis results of using Satisfaction as the dependent variable, and found Service Quality to appear first in the stepwise analysis. This confirms that although Service and Product quality both get significant value of .0000, but Service quality is the major contributor to Customer Satisfaction.

TABLE 4.11: REGRESSION ANALYSIS FOR LIKELIHOOD TO REPURCHASE

Dependent variable :	Likelihood to repurchase		
Adjusted R square	.648		
Variable	B	Sig T	*(Most Significant)
Satisfaction	1.023	.0000	*
Product quality	6.225	.0020	
Service quality	-1.805	.4113	
(Constant)	-21.166	.0025	

On the regression analysis using Service Quality as dependent variable, SERVPERF is confirmed to be more superior than SERVQUAL in surveying Service Quality.

TABLE 4.12: REGRESSION ANALYSIS FOR SATISFACTION

Dependent variable :	Customer satisfaction		
Adjusted R square	.459		
Variable	B	Sig T	*(Most Significant)
Product quality	6.839	.0000	
Service quality	7.834	.0000	*
(Constant)	19.116	.0006	

TABLE 4.13: REGRESSION ANALYSIS FOR SERVICE QUALITY

Dependent variable :	Service quality		
Adjusted R square	.168		
Variable	B	Sig T	*(Most Significant)
SERVPERF	.332	.0000	*
(Constant)	1.730	.0000	

The above analysis results bring forth significant meaning to the investigation of Customer Satisfaction. The results show a high correlation between customer satisfaction and likelihood of repurchase, this confirms that customer satisfaction is the key to retention marketing. The results also found service quality is higher contributing factor to customer satisfaction, and that SERVPERF is more superior in measuring service quality. All these have major implications to the individual copier marketers and even the whole copier servicing industry.

COMPARING BRANDS

A major objective of this section is to evaluate service quality gap between customer expected quality and customer perceived quality for each of four leading brands. Paired T test is used between each pair of the attributes, and results are presented in four different tables for the four brands.

The test results in Table 4.14 shows the paired t test results for Xerox brand. Out of 21 attributes, 18 attributes having significant gap between expectation and perceived quality. Xerox manages to surpass customer expectation on product features, and almost meet customer expectations on employees' appearing and material appearing. Overall there are much rooms for improvements as customer expectation are not met on 12 out of 21 attributes at a significant level 0.01.

For customers using Canon copier, results in Table 4.15 shows that customer perceived quality is lower than expected quality in 16 out of 21 attributes at a significant level of 0.01. Canon manages to meet customer expectation in product features and employee appearing. Overall it is the poorest in meeting customer expectation, in terms of number of attributes.

Results for Ricoh is shown in Table 4.16. Ricoh only manage to meet customer expectation in product features and service provided right at the first time. However customer expectations are not met in only 8 attributes at a significant level 0.01. This may not mean that Ricoh has a lesser problem

than Xerox and Canon, but it certainly helps Ricoh to put priority on improving these 8 attributes, namely print quality, copier breaks down, staff's promises, quick response to phone calls, prompt service, staff's willingness to help, employees' courtesy, and understand customer needs.

Minolta's customer responses are summarized in Table 4.17. There are four attributes that Minolta seems to meet customer expected quality, and even surpasses customer expectation in two of the attributes. Customers perceived Minolta's staff appearing and presentation material appearing are surpassing their expectation. And customers expectation on product features and telephone operators' attention to customer are met. Minolta has 6 attributes where customer expectations are not met at significant level 0.01. These attributes are Copier seldom break down, staff's promises, error-free billing, quick response to phone calls, prompt service and stock availability. Minolta seems to have less problems at hand compared to the other three brands. It could concentrate on solving the quality problems on the above six items, and it may surpass the other brands in service quality and consequently customer satisfaction.

Overall all four brands have few attributes that meet or surpass customer expectation. This may due to poor service quality provided by the copier marketers, or the copier marketers over promise their customer and thus build unrealistic expectation levels in customers' mind. This shall be further discussed in chapter 5.

TABLE 4.14: PAIRED T TEST FOR XEROX SERVQUAL SCALE

Attributes	E	P	2-tail sig. level	*
1. Copier features	5.68	6.10	.125	
2. Print quality	6.50	5.87	.000	***
3. Conform Spec.	6.10	5.60	.026	**
4. Staff appearing	4.89	5.16	.216	
5. Material appearing	5.11	5.14	.886	
6. Seldom break down	6.31	4.92	.000	***
7. Carry out promise	6.13	4.97	.000	***
8. Billing error-free	5.67	5.13	.021	**
9. Right at first time	5.94	5.00	.000	***
10. Inform service response timing	5.79	5.00	.005	**
11. Phone response	5.89	4.92	.002	**
12. Prompt service	6.21	4.84	.000	***
13. Willing to help	6.08	5.18	.000	***
14. Staff knowledge	6.03	5.18	.000	***
15. Staff Courtesy	5.92	5.31	.003	***
16. Repair skill	6.18	5.47	.000	***
17. Stock availability	5.86	5.51	.014	**
18. Operator's attention	5.46	5.11	.096	*
19. Ease of understanding for Contract & statement	5.78	5.19	.004	***
20. Complaint handling	5.92	5.16	.000	***
21. Understand customer needs	5.89	5.13	.001	***

Attribute means on scale 1 (strongly disagree) to 7 (strongly agree)

E. Customers' expectation quality

P. Customers' perceived service quality

*** 2-tail significant level 0.01

** 2-tail significant level 0.05

* 2-tail significant level 0.10

TABLE 4.15: PAIRED T TEST FOR CANON SERVQUAL SCALE

Attributes	E	P	2-tail sig. level	*
1. Copier features	5.58	5.30	.251	
2. Print quality	6.33	5.17	.000	***
3. Conform Spec.	5.94	5.11	.001	***
4. Staff appearing	5.23	4.82	.133	
5. Material appearing	5.55	4.89	.036	**
6. Seldom break down	5.97	3.83	.000	***
7. Carry out promise	6.14	4.25	.000	***
8. Billing error-free	5.56	4.75	.002	***
9. Right at first time	5.58	4.44	.001	***
10. Inform service response timing	5.61	4.33	.001	***
11. Phone response	5.89	4.47	.000	***
12. Prompt service	5.94	4.97	.020	**
13. Willing to help	5.89	5.00	.004	***
14. Staff knowledge	5.88	4.91	.001	***
15. Staff Courtesy	5.97	5.17	.009	***
16. Repair skill	6.02	4.75	.000	***
17. Stock availability	5.51	4.51	.000	***
18. Operator's attention	5.41	4.41	.004	***
19. Ease of understanding for Contract & statement	5.47	4.85	.022	**
20. Complaint handling	5.97	4.69	.000	***
21. Understand customer needs	5.80	4.68	.000	***

Attribute means on scale 1 (strongly disagree) to 7 (strongly agree)

E. Customers' expectation quality

P. Customers' perceived service quality

*** 2-tail significant level 0.01

** 2-tail significant level 0.05

* 2-tail significant level 0.10

TABLE 4.16: PAIRED T TEST FOR RICOH SERVQUAL SCALE

Attributes	E	P	2-tail sig. level	*
1. Copier features	5.28	4.57	.298	
2. Print quality	6.43	4.93	.002	***
3. Conform Spec.	6.14	5.28	.082	*
4. Staff appearing	5.43	4.43	.100	*
5. Material appearing	5.57	4.64	.078	*
6. Seldom break down	6.57	4.35	.000	***
7. Carry out promise	6.71	4.50	.000	***
8. Billing error-free	6.28	5.07	.029	**
9. Right at first time	5.78	4.78	.131	
10. Inform service response timing	6.14	4.78	.022	**
11. Phone response	6.50	5.07	.009	***
12. Prompt service	6.78	4.71	.000	***
13. Willing to help	6.57	5.14	.001	***
14. Staff knowledge	6.14	5.28	.075	*
15. Staff Courtesy	6.43	5.14	.005	***
16. Repair skill	6.21	5.28	.026	**
17. Stock availability	5.85	4.71	.014	**
18. Operator's attention	5.64	4.78	.075	*
19. Ease of understanding for Contract & statement	6.28	5.28	.013	**
20. Complaint handling	6.28	5.35	.026	**
21. Understand customer needs	6.43	5.21	.007	***

Attribute means on scale 1 (strongly disagree) to 7 (strongly agree)

E. Customers' expectation quality

P. Customers' perceived service quality

*** 2-tail significant level 0.01

** 2-tail significant level 0.05

* 2-tail significant level 0.10

TABLE 4.17: PAIRED T TEST FOR MINOLTA SERVQUAL SCALE

Attributes	E	P	2-tail sig. level	*
1. Copier features	5.54	5.54	1.00	
2. Print quality	6.36	5.00	.016	**
3. Conform Spec.	5.73	4.63	.014	**
4. Staff appearing	4.82	5.18	.441	
5. Material appearing	4.81	5.18	.519	
6. Seldom break down	6.45	4.82	.002	***
7. Carry out promise	6.54	5.18	.006	***
8. Billing error-free	6.27	5.18	.006	***
9. Right at first time	5.91	5.18	.070	*
10. Inform service response timing	5.82	5.00	.031	**
11. Phone response	6.09	5.00	.010	***
12. Prompt service	6.54	4.73	.001	***
13. Willing to help	5.91	5.18	.038	**
14. Staff knowledge	5.91	5.00	.085	*
15. Staff Courtesy	6.00	5.00	.019	**
16. Repair skill	6.54	5.09	.015	**
17. Stock availability	6.45	5.09	.006	***
18. Operator's attention	5.27	4.72	.167	
19. Ease of understanding for Contract & statement	6.00	5.27	.054	*
20. Complaint handling	5.91	4.91	.026	**
21. Understand customer needs	6.09	5.27	.042	**

Attribute means on scale 1 (strongly disagree) to 7 (strongly agree)

E. Customers' expectation quality

P. Customers' perceived service quality

*** 2-tail significant level 0.01

** 2-tail significant level 0.05

* 2-tail significant level 0.10

Competitive Brand Study Results

As the paired t-test indicates that all four leading brands faced service quality gaps with most of the items. Marketers of all four brands need to investigate whether they have either over promise their customers due to the intense competition, or they have serious internal quality problems in meeting internal specifications.

To further analyze and compare the performance of these four brands, the difference between perceived value and expected value on each attribute is taken and defined as SERVQUAL score. SERVQUAL score shall show the difference between customer expected and perceived quality on each of the attribute. SERVQUAL scores are then compared between brands to determine which brand has the highest and lowest gap.

Referring to Table 4.18, attributes with the lighter shade denote the leaders, and the darker shade marks the lowest score. Results shows that Xerox has overall highest average scores and leads in 18 out of 21 attributes. Minolta has 2 leading attributes, which are materials appealing and staff willingness to help. Canon possessed one leading attribute in prompt service.

Investing the total mean score for all brands, perceive value only surpassed expected value in one attribute, namely product features. Overall the widest gaps are found in "Copier seldom break down" and "staff's promises", these two attributes may

be the top priority items for all copier marketers to improve on.

TABLE 4.18: COMPETING BRANDS SERVQUAL MEAN SCORE TABLE

	TOTAL	XEROX	CANON	RICOH	MINOLTA
Q1	-.13	.42	-.26	-.71	.00
Q2	-1.10	-.63	-1.16	-1.50	-1.36
Q3	-.73	-.50	-.66	-.86	-1.09
Q4	-.24	.26	-.47	-1.00	.36
Q5	-.30	.16	-.66	-.93	.36
Q6	-1.81	-1.39	-2.05	-2.21	-1.64
Q7	-1.54	-1.16	-1.79	-2.21	-1.36
Q8	-.79	-.45	-.92	-1.21	-1.09
Q9	-1.03	-.89	-1.08	-1.00	-.73
Q10	-1.06	-.79	-1.34	-1.36	-.82
Q11	-1.30	-.97	-1.53	-1.43	-1.09
Q12	-1.41	-1.37	-1.13	-2.07	-1.82
Q13	-1.04	-.89	-1.03	-1.43	-.73
Q14	-.98	-.84	-1.16	-.86	-.91
Q15	-.86	-.61	-1.00	-1.29	-1.00
Q16	-1.03	-.71	-1.26	-.93	-1.45
Q17	-.82	-.24	-1.11	-1.14	-1.36
Q18	-.73	-.24	-1.13	-.86	-.55
Q19	-.76	-.50	-.87	-1.00	-.73
Q20	-1.11	-.76	-1.39	-.93	-1.00
Q21	-1.06	-.66	-1.29	-1.21	-.82
Q-TOTAL	-1.08	-.64	-1.22	-1.36	-1.09

To further analyze and confirm competitive position for the four brands in terms of service and product quality, the more superior SERVPERF scores are presented. The perceived values for each of the attributed are taken and defined as SERVPERF

value. The SERVPERF value of the four competing brands are presented in Table 4.20.

Referring to Table 4.20, SERVPERF scores means show a slightly different scenario, considering SERVPERF results represent the gap between adequate level and perceived quality, Xerox

TABLE 4.19: COMPETING BRANDS SERVPERF MEAN SCORE TABLE

	TOTAL	XEROX	CANON	RICOH	MINOLTA
P1	5.49	6.11	5.37	4.57	5.55
P2	5.35	5.87	5.18	4.93	5.00
P3	5.27	5.61	5.16	5.29	4.64
P4	4.90	5.16	4.84	4.43	5.18
P5	4.96	5.14	4.92	4.64	5.18
P6	4.43	4.92	3.95	4.36	4.82
P7	4.72	4.97	4.34	4.50	5.18
P8	5.01	5.14	4.70	5.07	5.18
P9	4.79	5.00	4.53	4.79	5.18
P10	4.76	5.00	4.30	4.79	5.00
P11	4.72	4.92	4.41	5.07	5.00
P12	4.86	4.84	4.89	4.71	4.73
P13	5.07	5.18	4.89	5.14	5.18
P14	5.05	5.18	4.83	5.29	5.00
P15	5.18	5.32	5.08	5.14	5.00
P16	5.16	5.47	4.79	5.29	5.09
P17	4.97	5.51	4.44	4.71	5.09
P18	4.70	5.11	4.29	4.79	4.73
P19	5.05	5.19	4.74	5.29	5.27
P20	4.93	5.16	4.62	5.36	4.91
P21	4.94	5.14	4.61	5.21	5.27
P-TOTAL	5.15	5.53	4.89	5.07	5.14

maintains as a leader in 9 attributes, Minolta in 5 attributes, and both co-lead in 2 attributes. Ricoh is leading in 4 attributes, and lacking behind in 5 attributes. Canon lead in only one item but scored lowest in 14 attributes.

Minolta leads in five attributes instead of 2 attributes as found using SERVQUAL scale, and Ricoh leads in 4 attributes as compared to zero item in SERVQUAL scale, may indicate that Minolta and Ricoh were actually providing good services, however they were perceived as not meeting expected standard may due to over promises to customers.

Referring to Table 4.20, overall evaluation shows that the industry does best in offering product features, P1 (5.49) and other products quality attributes P2 & P3, but poorest in preventing the copier from break downs, P6 (4.43).

Table 4.20: COMPETING BRANDS QUALITY, SATISFACTION & REPURCHASE MEAN SCORE TABLE

Product	3.51	3.84	3.42	3.36	3.27
Service	3.44	3.61	3.32	3.29	3.73
Satisfaction	70.10	77.16	62.61	70.36	74.55
Repurchase	66.28	74.34	57.53	69.64	68.00

When analyzing customers' rating on company's product and service quality, and their satisfaction and likelihood to repurchase toward the brand, Xerox achieved highest scores in

product quality (3.84), customer satisfaction (77.16%) and likelihood of repurchase (74.34%). Minolta lead in service quality (3.73) but scored lowest in product quality (3.27).

Ricoh scored lowest in product quality (3.36). However Canon has poorest overall results in customer satisfaction (62.61%) and likelihood to repurchase (57.53%). The above results may not be conclusive due to the small sample size and it indicates to the relevant marketers to conduct further research to determine customer perceived quality towards their brands.

CHARACTERISTICS OF HIGH AND LOW SATISFACTION CUSTOMER

One Way ANOVA analysis is used to identify the different characteristics of high and low satisfaction customer groups. Using Customer Satisfaction score as the comparing mean, each of the respondents' characteristics is tested and only two results showing significant differences between groups are presented.

Satisfaction by Speed of machine

The results in Table 4.21 shows that mid- and mid/high-speed (31-90) copier customers have higher satisfaction than the low speed (< 30) copier customer. The higher speed machine may be more reliable and causes less breaks down than the low-speed

copiers. However the high speed copier (> 90) customers are not particularly satisfied. These group of customers may expect much more service from the marketer due the copier cost are generally much higher than other range of copiers.

Satisfaction by Year of machine in use

The results in Table 4.22 shows that, other than the 2 over ten year old machine users, generally the newer machine users are more satisfied than the older machine users. This may hint to the marketers that the current copier users with machine aged between four to 10 years old are good prospect for renewing or upgrading copiers. The peculiar case in the over 10 years machine users may due to its small sample size (2 respondents only), and special care given to these old customers by the marketers.

TABLE 4.21: ONE-WAY ANOVA ON SATISFACTION BY MACHINE TYPE

Source	D.F.	Sum of Sq	Mean Sq	F Ratio	f Prob.
Between Groups	3	2593	864.3	4.191	.0080
Within Groups	90	18561	206.23		
Total	93	21154			
Mean*	Brands	< 30 ppm	> 90 ppm	61-90	31-60
61.55	< 30 ppm				
65.00	> 90 ppm				
72.33	61-90	♦			
73.28	31-60	♦			

♦ Significant level of 0.05

* Based on 100% scale

TABLE 4.22: ONE-WAY ANOVA ON PRODUCT QUALITY BY BRANDS

Source	D.F.	Sum of Sq	Mean Sq	F Ratio	f Prob.
Between Groups	4	3284.8	821.2	4.119	.0039
Within Groups	100	19937	199.37		
Total	104	23221			

Mean*	Brands	7-10 yr	4-6 yr	1-3 yr	< 1 yr	> 10 yrs
52.83	7-10 yr					
65.62	4-6 yr					
70.71	1-3 yr	♦				
76.75	< 1 yr	♦	♦			
85.00	> 10 yr	♦				

♦ Significant level of 0.05

* Based on 100% scale