Customer Service in Industrial Marketing: A Comparative Study

A RESEARCH REPORT

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In the Spring 1974 *issue of this journal, M. T. Cunningham and D. A. Roberts reported the results of a study they had conducted in the United Kingdom to identify what constitutes service as perceived by industrial buyers, and to measure the performance of suppliers of industrial raw materials against key facets of service*[1]. *The industrial buyers they selected for study consisted of twenty-five manufacturers of pumps and valves, and the products of interest were steel castings and forgings used in pump and valve production.*

This article reports the findings of a similar study of seventy-three manufacturers of pumps and valves conducted by the author in Canada [2]. *This research was inspired by the UK study. Consequently, it was designed in such a way that the results could be compared with those in the Cunningham and Roberts report.*

The overall research question investigated is: How do Canadian pump and valve manufacturers' perceptions of customer service offered by their metals suppliers compare with the service perceptions of their UK counterparts?

Methodology

A list of companies in the pump and valve industry in Canada was drawn up from listings in three sets of trade directories: *Canadian Trade Index*, *Scott's Industrial Directories*, and *Fraser's Canadian Trade Directory*[3]. By cross referencing these directory listings, a total of 343 Canadian companies was identified, 146 of which were shown as pump manufacturers, and 196 as valve manufacturers.

A self-administered four page questionnaire was mailed to these companies, addressed by name to the purchasing agent or, if no PA could be identified, to the general manager. Names of individuals holding these positions were obtained from the directories already noted, and additionally from *Directory of Directors*[4].

Since it was intended where possible, to test the findings of the UK study in the Canadian environment, the 13 service elements identified by the UK study were adopted without change. However, respondents were given the opportunity to supplement the list if they so desired. A pre-test of the instrument was conducted by personal interview with local pump and valve manufacturers before printing and mailing the final version.

The mailing generated a total of 73 usable returns, and these form the data base of the study. It should be noted that some of the companies indexed might be dealers or distributors of pumps and valves (rather than manufacturers), or might manufacture pumps and valves of a different nature than those intended for study (such as pneumatic bicycle tyre pumps, or leather valves). Unfortunately, such distinctions could not be determined from the trade directories. Hence, all 343 Canadian pump and valve company names generated from the directories were included in the survey, but qualifications were outlined in a letter requesting company participation in the study, and qualifying questions were included in the research instrument. Thus, although the number of usable responses represents only 21% of the mailing, in fact it represents a much higher proportion of the true population of Canadian pump and valve manufacturers, who are purchasers of steel castings and forgings.

The Respondents

The major industries in which these pump and valve manufacturers classify themselves include: machinery for 34% of respondents, and metal fabricating for 30%; while 6% are in electrical products, 6% in petroleum and coal products, and 4% in construction; with the remainder scattered. Their major customers are industrial users for 51 respondents, industrial middlemen for 17, and other categories such as municipal utilities, universities, and government for 4 respondents.

The distribution of respondents according to the size of their company's gross sales revenue for the fiscal year 1973 is shown in Table I. An indication of the size of their pump and valve operations may be observed in Table II, which lists their annual tonnages of metal devoted to manufacture of pumps and valves. It should be noted that despite the fact that the list of companies developed from the trade directories indicated a clear split between those in the pump business and those in valves, 26 of the respondents reported metal usage for both pump *and* valve manufacture.

The respondents were more or less evenly distributed among those for whom pump and valve manufacture accounted for a minor (less than 25%), a moderate (25-74%), and a major (more than 75%) proportion of the company's business (see Table III).

Table I. Size Distribution of Respondents

Gross Sales Revenue in millions of dollars	Number of Companies
Less than 1	13
1-4·9	30
5-9·9	7
10-24·9	16
25-99·9	4
100-249·9	1
More than 250	1
Not reported	1

Table II. Size Distribution of Pump and Valve Manufacturing

Usage of Metal in tons per annum	Number of Companies	
	Pump Industry	Valve Industry
Less than 50	31	30
50-199	7	11
200-499	6	3
500-1,500	4	8
More than 1,500	0	3

Note: Number of companies exceeds 73 because some companies manufacture both pumps and valves. Metal usage was reported separately for each product.

Table III. Importance of Pumps and Valves to Respondents

% of Company business represented by pumps and valves	Number of Companies
Less than 25	27
25-74	23
75-100	22
Not reported	1
Total	73

Table IV. Proportion of Pump and Valve Output Sold to other Companies

% of Output Sold	Number of Companies
Less than 25	16
25-74	8
75-94	6
95-100	39
Not reported	4
Total	73

Another measure of the importance of pump and valve manufacture to the respondent is the number of pumps and valves manufactured by the firm which are sold to other companies, rather than being used as components in other products which are manufactured by the respondents. These data are reported in Table IV. More than half (52%) of the firms reported that 100% of their output of pumps and valves was sold to other companies.

Importance of Service Elements

Canadian respondents were asked to rank all 13 service elements which suppliers might offer, in order of their relative importance. In the UK study, respondents were asked only to rank the five most important factors in the list of 13. Thus, for comparative purposes, only the first five ranked elements for each respondent in the Canadian study are reported in Table V.

Table V. Service Factors Classified According to their Importance to the Customer

Service Factor	Times Ranked in Top 5		Times Ranked First	
	UK	Canada	UK	Canada
Ability to meet quoted delivery date	25	65	11	41
Prompt and comprehensible quotation	11	42	2	5
Provision of technical advice for problem solving	15	40	3	4
Discount structure on list prices	0	35	0	10
Technical after sales service	6	32	0	1
Representation by supplier	7	30	1	3
Ease of contact with person in authority	12	28	3	8
Replacement guarantee	13	28	0	5
Willingness to manufacture a wide range	12	24	1	5
Pattern (or die) design service	3	18	1	1
Extended credit facilities	3	15	0	1
Availability of testing facilities	13	15	6	1
Provision of machining facilities	1	6	0	0
Total Possible	25	73	25	73

Similarly to the UK study, nine factors could be identified as apparently more worthy of mention; and the remaining four elements (*pattern design service*, *credit*, *test facilities*, and *machining facilities*) could be considered largely redundant because of their minor or irrelevant importance. The relative importance of these variables is indicated two ways: by the number of times they have been ranked in the top five, and by the number of times they have been ranked first. Thus it can be seen that on both criteria *delivery reliability* is considered to be most important by an overwhelming number of mentions. This result is identical to that in the UK study. The remainder of the service elements are ranked in decreasing relative importance in the following sequence: *prompt quotation*, *technical advice*, *discount structure*, *after sales service*, *sales representation*, *ease of contact*, *replacement guarantee*, and *willingness to manufacture a wide range*.

For comparative purposes, Table VI shows all 13 of the service factors which steel castings and forgings suppliers might offer, ranked in both the UK and Canadian studies according to pump and valve manufacturers' perceptions of their relative importance.

It is unlikely that the rankings of service elements would be identical in both countries. However, if customer technical requirements, corporate objectives of purchasing companies, modes of conducting business dealings, and cultural influences on the individual's perceptions were similar between the UK and Canada, one might expect only minor shuffling in the relative order of service components between each country.

The results of this study show that much more than minor shuffling is manifested. Three ample aberrations in the arrangement of service elements may be apprehended: the third ranked element in the UK study, *availability of testing facilities*, comes in second to last in the Canadian study. The seventh ranking factor in the UK study,

Table VI. Relative Importance of Service Factors in Ranked Order

UK Study	Rank (by % of times ranked in top five)	Canadian Study
Delivery reliability	1	Delivery reliability
Technical advice	2	Prompt quotation
Test facilities	3	Technical advice
Replacement guarantee	4	Discounts
Wide range of manufacture	5	After sales service
Ease of contact	6	Sales representation
Prompt quotation	7	Ease of contact
Sales representation	8	Replacement guarantee
After sales service	9	Wide range of manufacture
Credit	10	Pattern design
Pattern design	11	Credit
Machining facilities	12	Test facilities
Discounts	13	Machining facilities

prompt and comprehensible quotation, assumes second place in importance in the Canadian study. And the UK-ranked least important service component, *discount structure on list prices*, is rated fourth in importance in the Canadian study. Numerous potential reasons, some of which have been identified in the preceding paragraph, might account for these differences. However, further research would be necessary to determine the cause(s) of these substantial shifts in service element importance rankings.

Suppliers' Service Ratings

Pump and valve manufacturers were asked to rate current and potential metals suppliers' performance for each of the 13 service elements on a five point bi-polar semantic scale ranging from "excellent" to "bad" service. They did this for their main supplier, for their secondary (or back-up) supplier, and for a known supplier from whom they currently were not purchasing metal. The mean values for each of these performance ratings are reproduced in Table VII. By visual inspection it can be seen that on every element of service the main supplier's mean rating exceeds that of the secondary and non-supplier, and the mean score of the second supplier on every factor exceeds the corresponding value for the non-supplier.

Further comparison of main, second and non-suppliers' overall service performance (see Table VIII) in terms of the aggregate of mean values, an overall weighted score for service provided, and the aggregate of service element means weighted by relative importance of each element shows the same relationship between principal, secondary and non-suppliers. Thus, the relationship observed in the UK project is replicated and confirmed in this study. The buyer perceives definite differences among the service offerings of competing suppliers and either (i) has exhibited "service elasticity" by giving a larger proportion of his business to the supplier offering better service, (ii) has demonstrated "economic power" by negotiating with or persuading

Table VII. Performance of Main, Second and Non-suppliers on Service Factors

Service Factor	Main supplier mean score	Second supplier mean score	Non-supplier mean score
Delivery reliability	3·04	2·91	2·32
Prompt quotation	3·65	3·38	2·76
Technical problem solving	3·50	3·12	2·66
Discount structure	3·11	3·02	2·83
After sales service	3·60	3·28	2·81
Sales representation	3·64	2·90	2·81
Ease of contact	3·91	3·46	2·83
Replacement guarantee	3·90	3·47	3·10
Willingness to supply wide range	3·46	3·02	2·63
Pattern design	3·42	3·02	2·69
Credit	3·74	3·36	3·20
Test facilities	3·69	3·16	2·90
Machining facilities	3·09	2·96	2·65

Note: Score used: Excellent 5, good 4, adequate 3, poor 2, bad 1.

Table VIII. Comparison of Overall Service Performance of Suppliers

Type of supplier	Weighted score	Unweighted mean score on semantic scale	Weighted mean score on semantic scale
Main supplier	1,317	3·52	3·49
Second supplier	1,190	3·16	3·15
Non supplier	1,031	2·78	2·73

his most important suppliers to meet his service needs, or (iii) has "rationalised" his buying behaviour by attributing better service performance to suppliers he uses more.

Do Suppliers Give What Customers Want?

Comparing suppliers' mean performance scores on service elements with customers' rankings of service element importance, it can be seen that on the most important service factor, *delivery reliability*, suppliers perform worse than on any other aspect of service. On this point the Canadian study confirms the identical finding reported in the UK study. On other elements the two studies diverge.

Relatively better performance by suppliers is indicated on the next two most important factors. However, relatively poorer performance is exhibited for the fourth ranked factor in importance, *discount structure*. Except for the least important service element, *provision of machining facilities*, all the other factors receive fairly high performance ratings. Indeed, it would appear that suppliers are giving customers more than they need on several low priority service elements, for example, *credit* and *availability of testing facilities;* and not giving them enough of what they really want, namely *delivery reliability* and an appropriate *discount structure on list prices*.

Thus, the shrewd metal supplier would do well to evaluate the quality of service he is offering his Canadian pump and valve manufacturing customers, with a view to achieving higher congruency, where it is economical to do so, between the levels of various service elements he offers and the levels on those factors which buyers would desire to receive.

Service Segmentation

Although a number of the Canadian respondents manufacture both pumps and valves, those who concentrate on only one of these products were isolated for further examination to determine whether, as suggested in the UK study, service required by the pump industry is significantly different from that expected by the valve industry. The sub-samples chosen consisted of 19 pump manufacturers and 28 valve manufacturers.

From Table IX it can be seen that the pump industry buys a lower volume annual of castings and forgings, whereas the valve industry tends toward larger annual requirements. Similar to the observation of the UK study, the pump industry purchases its lower annual metal requirement in smaller batches of larger unit weight, compared to the larger batches of smaller unit weight bought by the valve industry. These, as well as other differences, do affect the mix of service required by each industry.

A comparison of service factor importance rankings by the two sub-samples is presented in Table X, and the service elements are rank ordered for easier examination in Table XI.

Although *delivery reliability* and *prompt quotation* retain heavy importance in both industries, *the provision of technical advice for problem solving* has much less importance to the pump industry (5th place) than to valve manufacturers, who rate it second. Other notable and large shifts in rank include the high importance of *after sales service* to pump manufacturers, compared to its low importance to valve manufacturers; and the much higher importance of both *ease of contract with the person in authority* and *replacement guarantee* to valve manufacturers, compared to their very low relative importance in the ranking by pump manufacturers.

Table IX. Annual Consumption of Metal—Pump versus Valve Manufacturers

Metal usage in tons	Proportion of pump manufacturers	Proportion of valve manufacturers
Less than 50	42·1%	33·3%
50-199	26·3	22·2
200-499	21·1	7·4
500-999	5·3	18·5
1,000-1,499	5·3	7·4
1,500-4,000	0	7·4
More than 4,000	0	3·7
Total Number of Companies	19	28

Table X. Service Factor Importance Comparison—Pump versus Valve Manufacturers

	% of Companies ranking factor in top 5		Times ranked first	
	Pumps	Valves	Pumps	Valves
Delivery reliability	100	89	10	19
Prompt quotation	63	57	4	1
Technical problem solving advice	42	68	0	2
Discount structure	63	43	1	4
After sales service	47	39	0	1
Sales representation	37	43	2	1
Ease of contact	32	50	1	2
Replacement guarantee	26	50	2	2
Willingness to supply wide range	37	39	1	3
Pattern design	32	28	1	0
Credit	26	21	0	0
Test facilities	26	14	0	0
Machining facilities	11	7	0	0
Total number of companies	19	28	19	28

Table XI. Service Factor Ranked Order Comparison—Pump and Valve Manufacturers

Pump manufacturers	Rank	Valve manufacturers
Delivery reliability	1	Delivery reliability
Prompt quotation	2	Technical advice
Discounts	3	Prompt quotation
After sales service	4	Ease of contact
Technical advice	5	Replacement guarantee
Sales representation	6	Discounts
Wide range of manufacture	7	Sales representation
Ease of contact	8	Wide range of manufacture
Pattern design	9	After sales service
Replacement guarantee	10	Pattern design
Credit	11	Credit
Test facilities	12	Test facilities
Machining facilities	13	Machining facilities

Another distinctive difference between these two market segments is their relative satisfaction with their suppliers. The five-point quality of service ratings on the 13 service factors yield scores that are approximately 0·3 scale points higher overall in the valve manufacturers' responses in comparison with the lower expressed satisfaction ratings by pump manufacturers.

How Suppliers are Selected

Although elements of customer service have been ranked in order of importance, the level or quality of service offered by competing suppliers on any single element may be very similar or quite dissimilar. For example, on a very important element of service, competing suppliers may be so similar that a lower-ranked element is used by the customer to distinguish between suppliers from which he will buy and those which he will not patronise. Consequently, pump and valve manufacturers' responses

regarding "in" suppliers and "out" suppliers[5] were compared using the discriminant analysis technique.

This analysis revealed that two elements of customer service outweighed by far all of the other components in discriminating between suppliers and non-suppliers. The element earlier ranked as second in relative importance, *prompt and comprehensive quotation*, and the seventh-ranked *ease of contact with person in authority* were revealed as characteristics which discriminate well in the separation of suppliers from non-suppliers[6]. On the other hand, the service element, *delivery reliability*, which was ranked earlier as most important in priority of buyers' requirements, was found to discriminate poorly between suppliers and non-suppliers (so poorly, in fact, that its coefficient in the discriminant function was both small and negative).

Thus, it would appear that suppliers of metal to the Canadian pump and valve industry not only should avoid the tendency to let their service performance slacken as they become established "in" suppliers, but also should be careful to maintain and even improve their quotation speed and the availability to their customers of responsible contacts, since these two service elements are most likely to contribute to the customer's switching his purchases to an "out" supplier.

Conclusions

Canadian pump and valve manufacturers perceive *delivery reliability*, *prompt quotation*, and *provision of technical advice* as the three most important aspects of service which their suppliers of forgings and castings could offer. Their principal suppliers, however, perform least well in their *delivery reliability*, and provide greatest satisfaction in offering *ease of contact with the person in authority* and *replacement guarantees*.

Two factors discriminate best between "in-suppliers" and non-suppliers: *prompt quotation* and *ease of contact*. On all service elements, main suppliers perform better than back-up suppliers, who in turn outperform non-suppliers.

Pump and valve manufacturers represent two distinct market segments which appear differentiable in service expectations. Valve manufacturers are more concerned about provision of *technical advice*, *ease of contact* and *replacement guarantees*, and generally are more satisfied with their metals suppliers; whereas pump manufacturers are most interested in *discounts* and after-sales service.

Comparing service expectations of pump and valve manufacturers in the United Kingdom with their Canadian counterparts, substantial disparities in relative importance of service components were found in the two ranked sets. It is hypothesised that these discrepancies may be caused by differences in (a) technical requirements, (b) corporate objectives, (c) modes of doing business, and/or (d) cultural influences on buyers' perceptions between the two countries.

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