

Customer Feedback in R&D Business

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Abstract : Present economic realities, especially the overwhelming influence of 'market' on every aspect of human existence, has brought about a change in the traditional R&D-philosophy of remaining aloof from 'business' activities. Now marketing the products of R&D to earn money is considered an essential aspect of R&D activity.

Measurement, analysis and management of customer satisfaction, essential for success in business, have been recognised as equally important for success in R&D also. Customer Feedback plays a very significant role in success of marketing technologies developed by R&D organisations. The feedback not only indicates the level of customer satisfaction, it can also reveal focus areas needing special attention.

The paper briefly discusses the factors influencing customer's satisfaction and loyalty, and the various sources of customer feedback. Further, citing examples from a case-study, an approach has been suggested for measurement and analysis of customer satisfaction, based on customer feedback. At the end, the paper discusses the steps taken so far to obtain meaningful customer feedback through the CSIR's Customer Satisfaction Evaluation (CSE) programme, at NML, and some analysis of the feedback received. The paper also discusses common problems faced in obtaining useful customer feedback.

Keywords : *Business, Customer, Evaluation, Feedback, Quality, R&D, Satisfaction, Supplier.*

INTRODUCTION

Market, customer, customer satisfaction etc. are traditionally considered to be typically business-related concepts. The world of Research & Development has so long remained insulated from these aspects of practical life. It must be admitted that R&D-world has actually looked down upon these concepts with an air of haughty

disinterest. The situation has, however, changed very significantly in the recent past. Market has become a dominant factor of almost all activities of human society. Since 'business' is the main function of any market, that has also grown very important, simultaneously. So much so that now there is a serious concern in the R&D-world on how to bring about a "Synergy of R&D and Marketing". The necessity of earning money for survival and growth has been recognised as a stark reality by the R&D-circles also. The only way to earn money for any R&D organisation is, of course, to deal in 'know-how' and 'technology', which are its natural 'products'.

There are two major players in any market— the supplier and the customer. And the market is primarily interested in two attributes of any commodity it deals in – quantity and quality. A very complex interaction amongst these four entities constitute 'business' in any market. The customer plays a very commanding role in these interactions. His demands primarily determine the quantity and quality of any product in the market. The word, 'product' connotes know-how, technology, manufactured items, services and all such things which the customer procures from the supplier in lieu of money. The supplier has to adjust his production and productivity to cope with the changing pattern of demands, simultaneously he has to monitor the level of customer's satisfaction with his product and marketing practice, and take suitable measures to conform to customer's expectations. Essentially, quantity of the product is linked to supplier's productivity, and its quality is linked to customer satisfaction. The modern market, characterised by Liberalisation, Privatisation and Globalisation, is highly competitive; it offers numerous alternative sources to choose from to the customer. The choice is mostly determined by the qualities of the product and its marketing. This has further enhanced the importance of customer satisfaction evaluation for the success of any business.

R&D business, i.e., business involving marketing of know-how and technology developed through R&D, depends more on the quality of the 'product' than on its quantity. It is, therefore, all the more important to lay emphasis on customer satisfaction evaluation in R&D business. The only practical way to evaluate the level of customer's satisfaction (or lack of it) with a product and its marketing is through monitoring and analysis of feedback received from the customer. Spontaneous

and unsolicited feedback received from the customer is useful to a limited extent only, since it is not structured and oriented to serve the supplier's analysis to enhance his business interests. Excepting complaints, the customer usually does not give any feedback voluntarily. There again, in a market full of alternative sources of supply, the customer would, more often than not, switch over to an alternative supplier to fulfil his needs than get into the hassles of lodging complaints about unsatisfactory products and getting them redressed. Hence, to acquire this vitally significant input for business management, namely, 'Customer Feedback', the supplier has to very carefully design and execute a strategy.

Importance of Customer Feedback

Customer is the ultimate and the most logical judge of the usefulness of a product; he pays for it; and the business is totally dependent on his patronage. Hence the importance of customer's evaluation of product. Customer feedback, entailing this evaluation, when obtained through a carefully designed and structured survey by the supplier, can have immense impact on the business prospects of the latter. Proper corrective measures taken by the supplier, on the basis of an objective analysis of customer feedback, can directly improve return on investment, profit, market share etc., which are conventional parameters to judge the health of any business. Increase in customer satisfaction is generally believed to (1) shift the demand-vs-price curve upward and/or make the slope of the curve steeper (i.e., lower price elasticity, higher margins of profit), (2) reduce marketing cost, (3) increase customer-retention, (4) lower transaction costs (contract negotiations, order processing, bargaining etc.), (5) reduce cost of replacing lost customer, (6) increase cross-selling (more products, larger accounts), (7) lower employee turnover (satisfied customers induce satisfaction to front-line personnel of supplier's organisation), (8) enhance reputation (positive word of mouth), (9) reduce failure costs (reduction in downtime, rework, warranty claims etc.)⁽¹⁾. The positive influence of increased customer satisfaction on business is so profound that satisfied customers can be viewed as an investment, and some accounting firms in the West suggest that the customer asset be included on the balance sheet and annual reports of the companies.

Besides the above, customer feedback can also influence a number of other business-related factors which may normally be considered to be in the sole purview of the supplier. For instance, customer feedback can lead to very significant change in the design of a product, process or service. This is all the more important in R&D, since in this case the customer is often associated with a project from the very initial stage of its conception itself; and his association usually continues till the commercialisation of the developed technology, or implementation of the generated know-how. Customer's expertise in areas closely related to the technology under development often brings in valuable inputs to the R&D efforts. R&D leading to the development of India's Light Combat Aircraft benefited significantly from feedback received from its customer, namely the Indian Air Force. Customer feedback may also influence many corporate policies. That the Laboratories of the CSIR have launched vigorous promotional programmes through advertisements, exhibitions, workshops, interactions with the business community etc., is a direct outcome of the influence of customer feedback. The decision to adopt the ISO-standards, taken by a number of R&D and other organisations, is also directly related to customer satisfaction. In fact, one of the main areas of emphasis in the ISO-9001/2000 standards is Customer Satisfaction – on its monitoring, evaluation and analysis, and on adoption of corrective measures based on those analyses, to enhance it.

Customer Satisfaction Management

The first essential step toward Customer Satisfaction Management is to define 'Customer Satisfaction'. Then comes its measurement based on customer feedback, analysis of the measurement-parameters, and application of controls (again with concurrent review of customer feedback) to enhance customer satisfaction. Ultimately, the total exercise should lead to improvement of the supplier's business performance. Needless to mention, that 'measurement-analysis-control-improvement' constitutes a cycle that must continue as long as the supplier intends to be in business and enhance its prospects.

Objective definition of customer satisfaction is as imperative for its proper measurement and control, as it is tricky because of

its essentially subjective nature. It is generally recognised that customer satisfaction is a function of customer's pre-purchase expectations and his post-purchase perceived performance of the product^[2]. Customer's perceived performance of the product is again dependent on his perceived quality and perceived value of the product^[3]. It is important to note that all these factors and their reflection in customer satisfaction are specifically related to an individual (or group of individuals), namely the customer, and are, therefore, subjective and essentially latent in nature – their only tangible expression comes in the form of customer feedback. For an objective analysis of customer satisfaction, it is, therefore, necessary to design a system to obtain this feedback in unambiguous and quantifiable form to ultimately aid the supplier's business interests.

Customer's expectations and perceptions are created in his mind; and are, as such, influenced by all the factors that influence his physical and emotional environments. These factors may be social, cultural, political, economic, geographical, familiarity-related, habit-related etc. For instance, a simple, utilitarian and technologically sound product like the pressure-cooker is very popular in countries keen to exercise fuel-economy; but is not at all popular in countries where fuel-economy is not considered very critical. In another case, lack of familiarity, coupled with political influence inhibited introduction of computers in many areas of common use till very recently. Often the supplier's own promotional activities (e.g., advertisements, publications etc.) may substantially influence the customer's expectations which may then conflict or concur with the performance of the product as perceived by him. Generally speaking, from an R&D organisation, supplying some technology or know-how, the customer expects the said 'product' to perform as claimed by the supplier, without any hassle. The customer also expects to be treated with courtesy and honesty.

Gaining customer's loyalty is the logical aim of any supplier. Loyalty, in the usual case of manufactured products, is manifested in the form of continued patronage by the customer toward the supplier. Increased customer-loyalty directly results in increased customer-retention. Indirectly, however, it also helps in acquisition of new customers. Loyal customers spontaneously

act as advertisers of the supplier's product, and help him gain new customers. This latter aspect is more important in R&D marketing than the aspect of customer-retention. An R&D organisation normally does not produce the ultimately consumable product by itself; it sells or licenses out its developed technology or know-how to an intermediate agency, called the entrepreneur who then produces and markets the final product. The entrepreneur, who is the customer of the R&D organisation, may not contact the latter unless necessary for some modifications of the procured technology or know-how, or for making a new deal. In any case, the customer of an R&D organisation is not normally expected to contact his supplier of technology or know-how for fresh procurements as frequently as the consumer of a manufactured product would do. Under these circumstances, acquisition of new customer becomes more significant than retention of old customer. Acquisition of new customer can be very significantly aided by the 'positive word of mouth' of the existing loyal customers, i.e., by the favourable appraisal of the supplier's R&D, circulated within the interested community, by the loyal customer.

Loyalty of customer has been established to be a function of customer satisfaction, switching barriers and voice⁽⁴⁾. Of these, the factor customer satisfaction has already been discussed. Switching barriers are those factors that make switching, i.e., moving over to an alternative supplier, difficult or less attractive to the customer. These barriers may be created in a number of ways, such as, legal, technological, political, economic etc. In India there are R&D organisations whose testing and certification are mandatory for marketability of certain types of equipment and products used in certain industries – this is a legal switching barrier in favour of those R&D organisations. Software compatibility, necessitated by a well-known and very widely used computer operating system, imposes a technologically created switching barrier on the customers of that operating system. Organisations engaged in defence-related R&D often enjoy switching barriers with respect to certain advanced technologies on which technology-transfer restrictions are geo-politically imposed. The third factor affecting loyalty is voice; and it simply means complaints lodged against a product by the customer based

on his perceived performance of the said product. Apparently, loyalty and complaints should have a reciprocal relationship. But large scale customer satisfaction surveys conducted in Sweden and elsewhere have established that complaints, redressed promptly and effectively, can actually increase loyalty of the customer.

Sources of Customer Feedback

Customer feedback can be obtained from almost all interactions between the supplier and the customer, if the former is keen and alert to capture the cues and signals besides the explicit comments given by the latter. However, a number of formal sources have been recognised for obtaining reliable and specific customer feedback in the ISO 9001-2000 documents; these are discussed below^[5] :

Customer complaints

This is perhaps the most spontaneous and common of all types of feedback received from a customer. That makes it all the more important, even though it actually expresses a negative aspect of the customer's assessment of the supplier's product. As has already been mentioned, if handled promptly, effectively and with sincerity, customer complaint can actually lead to increased customer loyalty.

Returns

This again is a very spontaneous, common and negative feedback; and is extremely damaging – it simply means that the customer cannot put the product to his intended use. This can result in loss of customer. It is said, "The cost of a defective item on the production line is fairly easy to estimate, but the cost of defective item that goes out to a customer defies measure..... goods come back but not the customer"^[6].

However, an R&D organisation, supplying technology and/or know-how, does not usually face the prospects of 'return' as such. A 'return-like' situation may still arise if the customer, getting exasperated with delays or other problems in completion of a contracted investigation project, demands refund of the project fees, or due to failure of the supplied technology/know-how, demands refund of the contract money. Potentials of these

situations to cause serious damage to the R&D organisation's business prospects, do not require any special emphasis.

Warranty information

Besides being important for all warranted products, this can be particularly significant in R&D business. Frequency and severity of invoking the warranty clauses by customers reflect on the reliability of the technology/know-how generated by the R&D organisation; and, of course, affect its reputation in the R&D market.

Customer satisfaction studies, Customer tracking studies, and Questionnaires and surveys

These are subtle variations of basically the same source. Questions, so designed that answers to them would elucidate customer's level of satisfaction with the supplied product, are presented to customer either by authorised employees of the supplier or by authorised personnel of a market research agency, hired by the supplier for the purpose. The surveys are conducted by post, by electronic mail, by telephonic contact or by personal interview. The accrued data is analysed as per a pre-determined methodology to assess the level of customer's satisfaction, his future intentions *vis-à-vis* his business-relationship with the supplier, the need to focus special attention on identified critical business activities of the supplier to improve his business performance.

Focus group meetings

A focus group is a body of 6 to 12 carefully selected customers who are highly valued by the supplier, willing to participate in these meetings, able to articulate issues, and convenient to invite to such group meetings. The focus group meets to brainstorm about future products, to define the nuances of satisfiers and dissatisfiers, to provide pointers toward optimal trade-off between price and features, to suggest ways to resolve any special issues, to examine supplier's promotional efforts, servicing efficacy, present product range etc. A trained facilitator (supplier's representative) of focus group meetings can discern the latent needs of customers from such meetings.

Report from customer organisation, Trade association information and Industry group information

These 'organisations', 'associations' and 'groups' are bodies of ultimate consumers, intermediate customers or industries, as the case may be, having interest in the same or similar products. Their periodic reports can provide valuable information about their needs and difficulties faced by them in fulfilling those needs, which can be of immense value to tune the supplier's efforts to meet those needs. For an R&D organisation, regular content analysis of these reports may give much needed direction to orient the research efforts, and thereby enhance the relevance of the developed technology/know-how.

Direct customer communications

This is specially significant for R&D organisations since they usually deal with a single customer or at the most very few customers for any one of their marketable technology or know-how, which makes their interactions more direct and intimate than is the case for some manufactured product marketed through intermediate traders, outlets etc. Further, customers of R&D products are usually entrepreneurs, and are hence very keen to utilise the procured technology or know-how to produce down-stream products, and are often quite knowledgeable in the relevant area. This makes direct communications from customers more available and valuable in R&D marketing.

Benchmarking data

Like in most other areas of human endeavour, in customer feedback analysis also, benchmarking may be used as an effective quality-enhancing tool. Simply stated, benchmarking means comparing with a 'better' example with a view to achieving that level of performance. In customer feedback analysis a supplier should choose emulatable examples from peer organisations, competitors, or even from organisations that may be directly unrelated to the supplier's business, but are very highly reputed in customer satisfaction. For instance, a supplier in Information Technology business may benchmark his customer feedback analysis with a supplier in Electronic Entertainment Industry. CEO of General Motors citing the

example of Chubbs (the internationally renowned lock makers), as the goal of quality standard to be achieved, is almost a legend in benchmarking.

METHODOLOGY AND PARAMETERS OF CUSTOMER FEEDBACK ANALYSIS

Methods adopted for customer feedback analysis vary in their details depending on their specific objectives, even though their ultimate general objective is always the same – improvement of the supplier's business performance. In the present case, where the supplier is an R&D organisation dealing in technology and/or know-how, the following two objectives for customer feedback analysis have been recognised : (1) to obtain a reliable index of customer satisfaction that provides not only a performance-indicator for the organisation, but also a means of comparison of the organisation's business performance with its peers, (2) to identify the focus areas of the organisation's business activities critically influencing customer loyalty.

Customer feedback analysis being a very new idea to R&D, practical examples of it are virtually non-existent. It is, therefore, necessary to learn from examples of practices followed in manufactured products business, and adapt the methodology to the needs of R&D business. Reports on these studies are usually classified, and hence not easily accessible for common reference. Further, whatever is available, cannot be freely quoted. Despite these restrictions, excerpts of only the employed methodology of analysis from a customer feedback analysis report are presented in this paper for purely academic purpose. This analysis was conducted by a reputed market research organisation, on a number of renowned bulk producers of a major industrial product, on behalf of a state agency (Ramachandra Rao P, Personal communications on a confidential report).

Eleven parameters were chosen to monitor and measure customer feedback on each company, and also to identify focus areas needing special attention of the respective companies to enhance customer satisfaction. These parameters, as selected by the market research organisation, along with corresponding parameters that the author considered suitable for any R&D organisation like a CSIR Laboratory, are shown in Table 1.

Table 1. Parameters of customer feedback analysis.

Sl. No.	Market Research Organisation's approach		Authors's suggestion for R & D organisations	
	Parameters	Wt.(%)	Parameters	Remarks
1	Pre-sales contacts	5	Interactions during project Planning	General : Appropriate weights to be assigned by the project teams. *In R&D business, the customer expects 'competence' to deliver the technology/know-how to be readily available with the R&D orgsn. Competence comprises knowledge and facility. Facility comprises manpower, equipment and infrastructure. ^b This requires a large-scale co-ordinated effort amongst CSIR (or similar R&D body), academia, financial institutions and engineering consultants.
2.	Technical specs.	15	Specs. of deliverables	
3.	Price	5	Project cost	
4.	Availability	15	Competence ^a	
5.	Packaging	10	Comprehensive Project Report	
6.	After sales service	15	Tech. Support-during and after technology transfer	
7	Behaviour of personnel	5	Behaviour of project team and others of the R&D organisation.	
8.	Stockyard facility	5	Technology park/incubator facility ^b	
9.	Timely delivery	15	Adherence to project schedule	
10.	Billing and accounts	5	Concessions/ deferred payment facilities	
11.	Commercial terms	5	Contract terms	

Customers to be brought under the survey were chosen in consultation with each company, so that they represented all the segments of the product's consumers, and that their total number for each company exceeded a certain figure to ensure statistical significance of their responses. Each parameter was weighted to truly reflect its unbiased significance on customer satisfaction, so that the total weight of the eleven parameters was 100 per cent. Questions to be put to the customers to reveal their true

response with respect to each of the eleven parameters were framed. Every customer was required to grade his response to each question on a scale of 5 – 1 indicating absolute dissatisfaction, fetching 0 per cent marks, and 5 indicating perfect satisfaction, signifying 100 per cent marks, with other grades falling in between. Finally the customer response to each parameter was converted into a percentage score; then they were weighted as per the pre-determined weighting scheme, and the sum of the weighted scores of all the eleven parameters for each company was taken as the customer satisfaction index for that company, for that year. The companies were graded according to their respective customer satisfaction indices – this fulfilled the first objective of the customer feedback analysis and provided the required comparison amongst peers/competitors.

To achieve the second objective of identifying focus areas, a series of computations were carried out.

Two criteria, namely 'Improvement' and 'Performance' were computed for each company under survey.

Improvement

An organisation's relative improvement (+/-) from the average improvement (+/-) of all the customer feedback parameters put together from the last year. This criterion revealed parameter-to-parameter variations within each company.

Performance

Deviation of the customer satisfaction score of each organisation from the overall mean of all the peer organisations for a given parameter. This criterion indicated company-to-company variations with respect to each parameter.

The method employed for the above mentioned computations is described with reference to Table 2. To simplify the discussions it is assumed that there are only four parameters of customer feedback analysis, p1, p2, p3 and p4, instead of the actual eleven; and that there are only three companies under survey, c1, c2 and c3, while in the actual case there were many. For data entries indexed with two digits, the first one refers to the parameter number and the second

Table 2. Calculation of criteria to identify focus areas.

Parameters	Companies						<u>d</u>
	c1		c2		c3		
p1	$\Delta 11$	d11	$\Delta 12$	d12	$\Delta 13$	d13	<u>d1</u>
p2	$\Delta 21$	d21	$\Delta 22$	d22	$\Delta 23$	d23	<u>d2</u>
p3	$\Delta 31$	d31	$\Delta 32$	d32	$\Delta 33$	d33	<u>d3</u>
p4	$\Delta 41$	d41	$\Delta 42$	d42	$\Delta 43$	d43	<u>d4</u>
<u>Δ</u>	<u>$\Delta 1$</u>	-	<u>$\Delta 2$</u>	-	<u>$\Delta 3$</u>	-	-

one indicates the company number. ' Δ ' stands for 'difference' from the last year's value for the same data item, and 'd' stands for data of the current year. Underscoring indicates that the data item is a mean of several related data items.

Thus the entries in Table 2 have significance as discussed below,

p1 = customer feedback parameter 1. Similarly, for the other p's.

c1 = company 1. Similarly, for the other c's.

d23 = current year's score in parameter 2 for company 3. Similarly for the other double indexed d's.

$\Delta 42$ = difference between d42 of this year and the corresponding score of last year. Similarly for the other double indexed Δ 's.

d1 = mean of (d11+d12+d13). Similarly for other underscored d's.

$\Delta 2$ = mean of ($\Delta 12+\Delta 22+\Delta 32+\Delta 42$). Similarly for other underscored Δ 's.

Improvement of c1 in p1 = $\Delta 1$ - $\Delta 11$, improvement of c2 in p4 = $\Delta 2$ - $\Delta 42$. Similarly for the improvement scores of other companies in the other parameters. Differences are carried out column-wise.

Performance of c1 in p1 = d1 - d11, performance of c3 in p2 = d2 - d23. Similarly for the performance scores of the other

companies in the other parameters. Differences are carried out row-wise.

P E R F O R M A N C E		I M P R O V E M E N T		
		>i%	>j to <i%	≤j%
>+m%	>+m%	Great going !	Be eareful !	Complacent (?)
	+m to -m%	Keep it up !	Mediocre	Inertia !
	<-m%	Extra effort needed	Half-hearted attempt !	Wake up or sink!

Note :1, [i>j] :

2. Customer feedback parameters justifying entry into any of the above rectangles are attributed the comment given in that rectangle.

Fig. 1. Matrix chart to indicate focus areas.

Once all the improvement and performance scores for all the companies in all the parameters are computed, a chart, as shown in Figure 1, is prepared for each company, showing the areas of strength and weakness for the company. Based on this chart, the management of the company may then decide upon the focus areas for the year ahead. Numeric values (like i, j and m), defining boundaries of the significance-quadrants on the 3x3 matrix chart, are determined on the basis of range and variation of the improvement and performance scores. Figure 2 shows an example of a completed focus area chart.

P E R F O R M A N C E		I M P R O V E M E N T		
		>6%	>2 to <6%	≤2%
>+3%	>+3%	Pre-sales contact. Availability.	Timely delivery. Price.	Behaviour of personnel.
	+3to -3%	After sales service. Technical Specs.	Billing & Accounts.	Packaging.
	<-3%		Commercial terms.	Stockyard facility.

Note : Parameters in the shaded area need critical attention. Compare with comments given in the corresponding rectangles in Figure 1. Also refer to Table 1.

Fig. 2.: An example of completed focus area chart.

CURRENT PRACTICE OF CUSTOMER SATISFACTION EVALUATION IN CSIR

Since 1998 a form of Customer Satisfaction Evaluation (CSE) is being carried out in some Laboratories of the CSIR, based on customer feedback analysis. However, it differs from the one described above. In CSIR's CSE, after careful planning and execution of an R&D project, the customer is requested to fill in a 4x4 matrix format as shown in Figure 3, to indicate his assessment of the total project work with respect to certain pre-determined features^[7]. After this stage, there is a provision for a third-party direct interview of the customer to further probe his feelings and needs with reference to the same project. That,

CUSTOMER SATISFACTION EVALUATION OF CSIR'S R&D PROJECTS

(To be filled in by the Laboratory)

Laboratory Name :	Project leader :
Project Title :	
Project No. :	Project cost. :
Date of Commencement of Project :	
As per Contract :	Actual :
Date of Completion of Project :	
As per Contract :	Actual:

(To be filled in by the Customer)

Features	A	B	C	D
OBJECTIVE Achieving the objective as stated in agreement	More than stated	As stated	Less than stated but significant	Insignificant achievement
SCHEDULE Adherence to work plan as in agreement, or as rescheduled	Ahead of schedule, or on schedule in spite of major constraints	On schedule	Behind schedule due to major constraints	Behind schedule
OUTPUT Output accomplishment or performance improvement	As committed, meets customer's business need, has its application clearly defined	As committed, meets customer's business need, but its application is not clearly defined	As committed, but does not meet customer's business need	Not as committed in the proposal
USABILITY Usability of the innovation/output of the project	Readily usable, has significant impact for a prolonged period	Readily usable, has significant impact, but not for a prolonged period	Readily usable, but does not have Significant impact	Not readily usable

Fig. 3: Format for CSIR's Customer Satisfaction Evaluation

however, is yet to be fully implemented. Only the first stage of CSE is, therefore, briefly discussed here.

On any feature, scoring 'A' entails 4 marks (the maximum possible score), 'B' fetches 3, 'C' fetches 2 and 'D' fetches 1 (the minimum possible score). The letter scores on all the four features are converted into numeric scores, which are summed up and then divided by 4 to get the Grade Point Average (GPA) for the project under consideration. Thus the GPA of a project, scoring C, B, A, D on the 4x4 matrix, would be $[(2 + 3 + 4 + 1) \div 4]$ or $[10 \div 4]$ or 2.5 (out of a maximum of 4), which is equivalent to 62.5 per cent. The mean of GPA's of all the projects completed

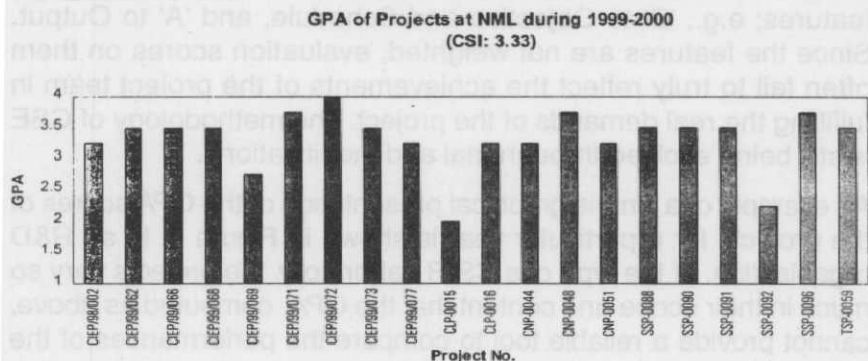


Fig. 4: Simple presentation of GPA scores as obtained in CSIR's CSE programme.

Distribution of CSE grade points at NML during 1999-2000

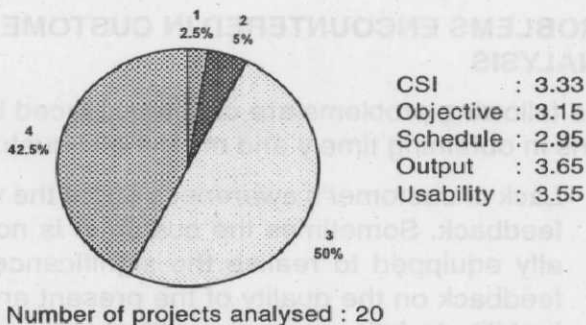


Fig. 5: Feature-wise analysis of grades scored by projects.

in any CSIR Laboratory during any year gives the Customer Satisfaction Index (CSI) of that Laboratory for that year. Based on the experience gained so far, a few problems have been perceived in its implementation. To partially offset the difficulties associated with the proposed third-party interviewing of the customers of every completed project, some extra pages of questions have been added on trial to the above mentioned 4x4 matrix format. This, unfortunately, increases the feedback burden on customers, who are often reluctant to fill up even the simple one-page format. Further, the evaluation options given against the features in the 4x4 matrix format are so worded that they tend to bias the customer to assign certain typical scores to certain features; e.g., 'B' to Objective and Schedule, and 'A' to Output. Since the features are not weighted, evaluation scores on them often fail to truly reflect the achievements of the project team in fulfilling the real demands of the project. The methodology of CSE is still being evolved through trial and modifications.

An example of a simple graphical presentation of the GPA scores of the projects for a particular year is shown in Figure 4. In an R&D organisation, of the type of a CSIR Laboratory, the projects vary so much in their scope and content that the GPA, computed as above, cannot provide a reliable tool to compare the performances of the different project teams. Figure 5 shows the results of feature-wise analysis of the grades scored by the same projects. It can be seen from the figure that of the total 80 feature-wise scores, 42.5 per cent were 'A' (=4), 50 per cent were 'B' (=3), 5 per cent were 'C' (=2) and 2.5 per cent were 'D' (=1).

PROBLEMS ENCOUNTERED IN CUSTOMER FEEDBACK ANALYSIS

The following problems are commonly faced by R&D organisations in obtaining timely and meaningful customer feedback :

1. Lack of customer's awareness about the value of customer feedback. Sometimes the customer is not at all intellectually equipped to realise the significance of his objective feedback on the quality of the present and future projects. Inability to fully comprehend the nuances of the language used in the feedback sheets also creates problems at times.

2. Lack of time to fill up the customer feedback questionnaire sheets. Usually the projects are conceived and initiated by high-ranking officials of the customer's organisation, who cannot devote time to read, understand and respond to the feedback questionnaire.
3. Lack of willingness to participate in customer feedback analysis. Since the initiative to get feedback is taken by the supplier, some customers habitually try to distance themselves from the activity.
4. Change of personnel at customer's end. The person who initiates a project may leave before completion of the project. The next person, taking charge of the project on behalf of the customer's organisation, may have an altogether different perspective about the project, or may even be totally disinterested in it.
5. General apprehension based on, "*shatang bada maa likha*" type philosophy. Scepticism and unfounded caution against suppliers possible 'real' intentions often inhibit the customer from giving his evaluation of a project in writing. Further, clear and written acceptance of the achievement of certain project-objectives may pose a potential danger to the customer's business interests (especially if the R&D organisation is a Government agency), if his business activities are not fully overboard.

The project team, particularly the Project Leader, has to put extra efforts right at the time of project planning to sensitise the customer adequately about the nature, content, necessity and utility of the feedback that he has to subsequently give on completion of the project. Thereafter they have to be very patient and persuasive to induce the customer to give the required feedback. This activity has to be recognised by every project team as an essential step in the execution of any project.

CONCLUSIONS

Since Customer Satisfaction directly relates to quality, and in R&D business quality overwhelmingly outweighs quantity,

Customer Satisfaction Evaluation is a must for every R&D organisation.

Customer Feedback is the only practical means of conducting effective Customer Satisfaction Evaluation.

There are internationally established methodologies of Customer Satisfaction Evaluation based on Customer Feedback Analysis.

R&D organisations have to adapt one of these methods of Customer Satisfaction Evaluation through Customer Feedback Analysis, to remain competitive and prosper in R&D business.

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Panel Discussion

R&D Management

R&D Management : A fad or need

It was felt there should be short term as well as long-term perspectives in R&D management with a view to convert ideas into wealth, which should be measurable. Today customer has multiple choices in selection of a product, therefore R&D is a must to survive in the competitive environment. Industries can no longer pretend that they are doing R&D.

Improving R&D Productivity through technology push

Whether R&D should be based on technology push or market pull depends on several factors like type of product, industries, market demand etc. Technology push means frontier areas should to be identified by the R&D organizations for long-term sustenance, whereas market pull may be a short-term requirement. Therefore R&D organization should have both short-term plan and a long-term strategy. The laboratory should collaborate with industries to give a long-term perspective to their in-house R&D projects. Continuous investment in R&D is necessary to survive the competition. Technology push can create a market pull as Japanese have done. They first create a product and then come to market and then by continuous improvement they will not allow any other product to come to the market.

Methods to improve odds for research successes

It is often found that lack of confidence in our own research is responsible for failure of research projects. The success of research depends on several factors such as:

- How serious is the management for research?
- What is the research policy of an organization?
- What is the level of motivation?
- Proper recognition to the scientists

There is a need to develop a suitable model for our country involving industries, R&D and academic institutions and others to improve the rate of research successes.

To improve quality in R&D: improve the team work process

Most of the time R&D lacks team spirit, which prevents its success. The concept of team has also changed. Today team means not only the research personnel but also the customer and the ultimate users. They are all partners in the technology development.