

SOFT PROBLEMS - HARD IMPACTS: SOME APPLICATIONS

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Abstract

There are many problems whose outcomes depend significantly on the initiatives and actions by individuals and groups. These problems are referred here as soft problems. In order to be able to address these problems in a desirable manner, it is necessary to recognise the concerns of various individuals and groups and reorient them towards a desirable solution. Though these problems are soft in nature, their outcomes have significant impact on the organisations and stakeholders. As a result, it is important that these problems are addressed effectively. Concepts from problem structuring methods under the umbrella of soft O.R have been employed to address some of these soft problems.

SOFT PROBLEMS

Soft problems are being defined as a class of problems where the role of individuals and groups has significant impact on the outcome. As it is said that in *any situation in which human beings try to act together will be complex simply because individuals are autonomous* (Rosenhead 1989). It is due to an individual acting in a manner which he thinks best in terms of his own perceptions, values, knowledge and similar other parameters. However, these actions by individuals and groups may not necessarily be the best in the interest of the organisation and other stakeholders in a given problem situation. One can think of soft problems having some of these characteristics:

- cause – effect relationship not explicit,
- basically problems with significant impact of individual /group actions,
- perception of the issues and expectations from the solution by individual /group are the main determinants of the problem parameters,
- different individuals (groups) look at problem dimensions differently,
- implementability is enhanced with the agreement (participation) of everyone.

We look at some of the problems here where the role of human being is substantially high in the overall problem context. We address these problems by using some of the developments in the field of soft operational research.

HARD IMPACTS

Hard impacts refer to criticality of the problem outcomes. In case the outcomes of the problem are not in line with the desirability of the stakeholders and the organisation, it may result in disastrous consequences. This could be in terms of unfavourable developments or impacts on the entire society or the organisation as a whole. Operational Research developed over more than seven decades as a problem solving discipline faces a challenge in addressing such soft problems

with hard impacts. One exclaims Can O.R. Help! At a fundamental level operations research is viewed as:

- Analytical Approach – Not necessarily Quantitative
- Multi Disciplinary Team
- Focus on Problem Solving and Implementation

SOFT OPERATIONAL RESEARCH

The fundamental problem solving focus of operational research has resulted in development of a related sub-discipline of soft operational research. These are a class of operational research approaches which try to address issues related to individuals and groups having significant impact on the problem outcomes. It is essential to have greater understanding of the problem in order to solve them in an effective manner. The problem structuring methods (PSMs) provides an approach for greater understanding of problems which can then help in an acceptable solution of the problem.

PROBLEM STRUCTURING METHODS

Problems can broadly be classified as well-structured and ill-structured (Mingers & Rosenhead 2004). A problem has three features:

- i. performance measure(s)
- ii. set of constraints
- iii. a cause-effect relationship.

As opposed to well structured problem, in an unstructured or ill-structured problem, the above three problem features may not exist formally or are not explicitly defined. This results in a complex problem (messy) situation, the degree of which depends on the extent of clarity or explicitness of the problem features. In recent decades, there have been creation, development and implementation of new approaches and methods to deal with the structuring of such complex problematic situations or messes, with the purpose of decision making and the elaboration of plans for action (Vidal 2004). These approaches address the ill-structured / messy problems and are broadly classified as Problem Structuring Methods (PSMs). Problem Structuring Method is usually characterised as being non-mathematical, using system's based concepts, processes and techniques, and emphasising dialogue and participation of stake holders. These methods try to combine practical experience with theoretical knowledge, and objective facts with subjective appreciation, with the purpose of problem solving in very complex situations. In an operational framework, *Problem Structuring Methods* (PSMs) (Franco et al 2004) are a family/set of methods for decision support that assist groups of diverse composition to agree a problem focus and make commitments to consequential action. Their characteristics feature is the use of a model to represent alternative versions of the complex situation of common interest, combined with facilitation to help group members make constructive mutual adjustments.

Unstructured (ill-structured) problems are characterised by (Rosenhead and Mingers 2001)

- multiple actors,
- multiple perspectives,
- incommensurable and/ or conflicting interests,
- important tangibles,
- key uncertainties.

In such a situation, Problem Structuring Method (PSM) offers a way of representing the situation (that is, a model or models) that will enable participants to clarify their predicament, converge on a potentially actionable mutual problem or issue within it, and agree commitments that will at least partially resolve it. In order to achieve this, PSM aims to:

- enable several alternative perspectives to be brought into conjunction with each other,
- be cognitively accessible to actors with a range of backgrounds and without specialist training, so that the developing representation can inform a participative process of problem structuring,
- operate iteratively, so that the problem representation adjusts to reflect the state and stage of discussion among the actors, as well as vice versa, permit partial or local improvements to be identified and committed to, rather than requiring a global solution, which imply a merging of the various interests.

A large number of Problem Structuring Methods have been developed over a period of time. There is no specific approach as to which method to be used under a particular situation. This is best left to the analyst or decision maker. However, in many cases more than one method, multi-methodology, is used. The basic purpose of Problem Structuring method is to have a greater understanding of the problem and move towards an agreement on a set of actions by the stakeholders. In many situations, the approaches used in a particular problem may not exactly be the same the way the methods have been developed. But, a modified approach of the basic methodology of a particular PSM approach is made use of as desired in a particular problem situation.

Some of the issues common to all the problem structuring methods are as follows:

Negotiation: There is an active process of negotiation between the stake holders to agree to a common action plan.

Workshop: The methods necessarily follow a workshop format with equity principle.

Large Group Methods: In most cases the total number of actors is rather large. So the methodology associated with Large Group Methods is followed.

Co-operative Process: A co-operative process involving a plurality of social actors, including intended beneficiaries, is followed to identify strategies for guiding societal change.

As mentioned above, the approach in each individual case varies depending on the nature and problem situation. However, basic concept and direction to achieve a common understanding to find an acceptable solution remains same.

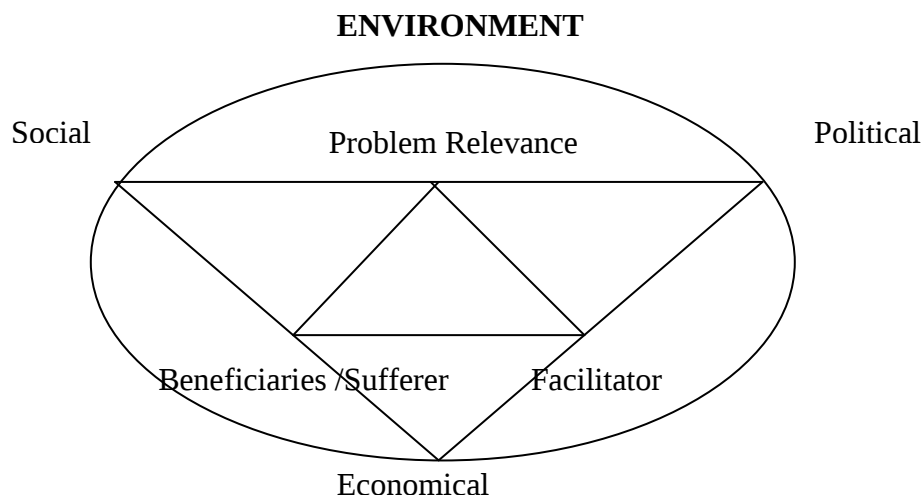
CHANGE MANAGEMENT

It is often said Change is inevitable and is for better. However, it is not necessarily true that all changes result in better situation compared to the previous. Again it is important to realise ‘better for whom’; ‘better from what’; and the like. The effect on people is the definition of change. A change; which does not have effect on people is not worth analysing or looking into. As a result

in all change process the central theme is people. One thing can be said with certainty that a change can be implemented successfully only with active participation of the people concerned (Gurtoo and Tripathy 2000).

Change, usually, have effect on people and thereby necessitating analysis of change processes. In its simplest form one can think of a change in the organisational context as a result of reorganisation of work place. The reorganisation of the work place can be effected by new technology, new equipment, new work method or introduction of new product. All these have an impact on the people associated with the particular work place. Sometimes the impact on people can be substantial, due to loss of job, higher stress level, and the like; as a result of change. One thing can be said with certainty that the change can be implemented successfully only with active participation of the people concerned.

ELEMENTS OF CHANGE



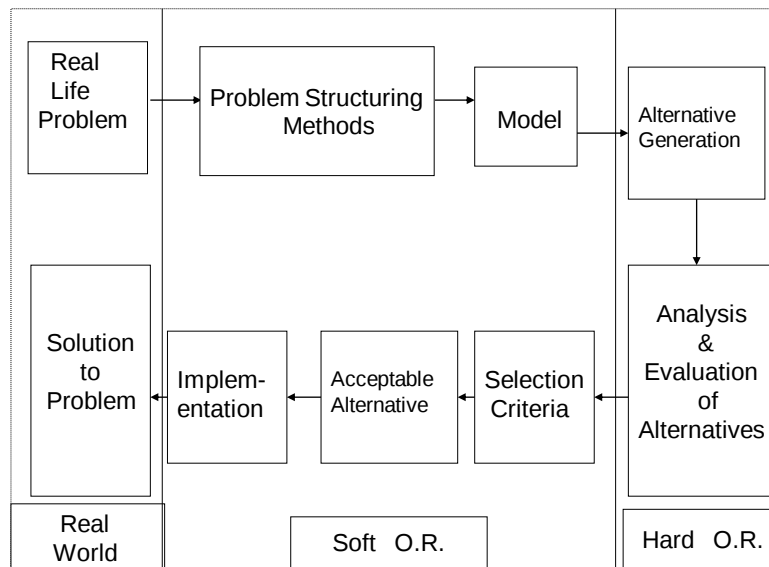
As depicted above, a change in any system can be due to changes in the external environment in which the system operates, or due to changes in the internal factors within the system. In a system, the changes in the external environment can be the social, political, or economical systems. The internal factors could be changes in problem relevance, beneficiaries / sufferers or facilitator. Any of these may have an impact on people associated with the system, necessitating an analysis of the change process for successful implementation. It is important that the change management issues are kept in view for implementability.

SOFT OR - HARD OR

A schematic problem solving model showing the relation between SOFT OR and HARD OR has been shown in the diagram below. As can be seen, in most problem situations there is a role for

both soft and hard OR approaches. The approaches discussed in various problem situations also highlight the relevance of both in a problem situation.

SCHEMATIC PROBLEM SOLVING MODEL



RESTRUCTURING NEWSPAPER INDUSTRY

Due to substantial progress in electronic and telecommunication technology, there has been significant impact on the operations of newspaper industry. In addition, globalisation has also made its impact on the newspaper industry. Further, in the Indian context, deregulation of newsprint has added to various environmental changes in the newspaper industry. The situation of restructuring of the newspaper industry can be described as follows:

- Need: Technological Changes
Competition – Global & Electronic Media
Deregulation of Newsprint
- Structure: Nearly 400 Designation / Job Titles
Varying Sizes, Many Languages, Regional / National Reach, Different Periodicity
- Scope: Rationalisation of Job Titles and Salary / Wage groupings

The restructuring involved the entire industry in the country with thousands of newspapers and large number of people. Hence, any restructuring needs to have certain amount of consensus among all the stakeholders like the owners, unions and employees. More than anything else, all views, perceptions and understanding of both individuals and groups form the key to the restructuring of the newspaper industry. To that extent it conforms to the framework of soft problem. Further, it has a potential of hard impact as an undesirable outcome may paralyse the

entire news gathering and dissemination. As a result, certain approaches as prescribed by PSM like environment and participation of various individuals and groups were considered to be key factor in the analysis. Towards this direction, extensive discussion and deliberation were held with large number of individuals and groups associated with the newspaper industry in different capacities like owner / union / employees. The process was aimed at bringing about a change in the perceptions / views of different actors towards an integrated approach to address the relevant issues. Though the basic job evaluation technique was employed for data collection and analysis, the approach of PSM where employed to bring about a common understanding. The broad methodology and recommendations were as follows:

Methodology:	Sampling of Newspapers Identification of Key Job Titles Data Collection – Job Evaluation Formats Discussion / Interview – Owner / Management, Job Holders
Recommendations:	Approximately 100 Job Titles in Working Journalists / Non Working Journalists / Factory Staffs (Wider Job Profile – Enrichment)
Guiding Principle:	Empowerment Encouraging Creativity and Excellence Facilitating a Reward Mechanism

An implementation of framework for the study finding was also suggested for smooth transformation process. However, outcome of the study was complete rejection of study findings. This necessitated a stock-taking exercise to identify the factors resulting in such an outcome. A quick review pointed out to a situation of improper/ partial identification of customers / owners / actors for the study. Those who were not considered, were stronger players in the system which resulted in its rejection as their perceptions, views did not get any attention. Some details are provided below.

A newspaper industries wage-board is constituted by the government (Government of India – Ministry of Labour). The members are drawn from retired bureaucrats, judiciary and other individuals/ functionaries and representatives from unions. In this case the wage board was headed by a retired Chief Justice of a High Court. The study team made an assumption that since the Board is constituted with substantial deliberations and members are of certain standings in the society, it will take rational decision after due considerations of the recommendations. Based on this assumption, no effort was made to have any specific dialogue with the Board. Efforts were concentrated on taking into confidence the customers (beneficiaries/sufferers) and developing a common broad understanding. The transformation process is to rationalize the job classifications in line with the technological developments and job enrichments. The customers perceived the change process as a means to reduce the workforce and affect the salary structure adversely. However, they were explained the details and their concerns were addressed and were willing to go ahead with the recommendations. Finally, the Board discussed the report of the study team, just giving a day's notice to the study team to participate. The study team could not participate as it involved making travel arrangements in a short period and also rescheduling of their activities. The team was communicated that the report was not accepted. No reason whatsoever or any feedbacks were given.

Learning: The OWNER (who could stop this activity), in this case the wage board were not consulted adequately. No efforts were made to understand the owner's priorities or desires. It was assumed that they will act and decide rationally.

SALARY AND ALLOWANCES OF MEMBERS OF PARLIAMENT

Salary and allowances of Members of Parliament in India is governed by Members' Salaries and Allowances Act of 1954. Any change in the salary takes place only through an amendment of the act. Over the years, due to the process of amendment and sensitivity of the problem, the salary and allowances of members of parliament did not keep in pace with salary increases in other sectors. Broadly, the nature can be characterized as follows:

- Covered by Member' Salary and Allowances Act 1954 (MSA Act 1954)
- Periodically Amended without any vote against the motion
- Adhoc Basis
- Feeling that the Salary is too low
- Latent demand to increase ten times

It can be realised that parliament is represented by different groups of political parties with completely different ideologies and perceptions of issues. At the same time, the deliberations at the parliament have hard impactson the entire country. One can imagine the soft nature of the problem and the hard nature of its impact. The way the problem was addressed is presented below:

Objective:

- To develop a Rationale in Determination of Salary and Allowances of Members of Parliament
- To remove ambiguities in administration of the System
- Automatic Correction / Enhancement of Salaries and Allowances
- To facilitate MPs to perform better through proper system of salaries and allowances

In the framework of SSM one can represent it as:

C	members of parliament
A	members of parliament, chairpersons of the lower and upper houses, parliament secretariat
T	expectations of better salaries and allowances → expectations met facilitation towards better performance → facilitated expectation of enhancement of perquisites → perquisites enhanced
W	better parliamentary processes and appreciation by citizens
E	prevailing social and political situations

Various inputs were available in terms of the perceptions and expectations of different customer groups. These were highly diverse and seemingly irrational. It was necessary to have a convergent view on the issue. Accordingly the process followed included and focused on some of the followings:

- Discussion with cross section of MPs
- Discussion with members of appropriate committees and sub-committees
- Discussion with officials of Parliament Secretariat
- Information on salary and allowances in other countries
- Questionnaire survey carried out by Parliament Secretariat
- Data on salary and allowances of Legislative Assemblies
- Clarity on role of members of parliament – as perceived by them
- Equivalent socio-economic grouping of the members of parliament
- Of course – the salary for the members of parliament

Large no. of small group meetings were held with members of parliament having same political affiliation. These were discussed in the working group having representation from various political groupings. Initially the views were highly divergent and most of the members repeated the respective party view points, as expected. However, it was found that on salary; every member was looking forward to an increase but not to the extent initially perceived to be. There were many rounds of discussions and a convergent of views emerged on “Clarity on role of members of parliament – as perceived by them” and “Equivalent socio-economic grouping of the members of parliament”. Once there was a better and by a large a common understandings were achieved on two key areas stated above, the task of determination of salary and allowances was relatively simpler.

At the end of the study, the recommendations on the salary and allowances of Members of Parliament were made. So far as the outcome is concerned, the recommendations on salary were implemented in toto; but only a few of the recommendations on allowances were implemented.

On the basis of this, one can generally say the outcome of the problem was successful. While we are analysing the factors contributing to the success, it became clear that a wider consultations with many political groups and channelising the discussion towards a common goal was the significant factor for its success.

Learning: An appropriate approach backed by rational arguments can result common understanding among highly diverse groups.

REWARD SYSTEM FOR A R&D ORGANISATION

The R&D set up in the organisation played an important role in terms of development of new products. The introduction of new products was a major competitive weapon for the organisation. However, the organisation was facing the following difficulties in respect of the R&D division.

- high level of resignations of R&D personnel
- unusually long time in development of new products
- less interaction of R&D personnel with other sister divisions in the organisation resulting in difficulty in introducing new products
- less than expected performance of the new products
- etc.

The organisation was prepared to enhance the compensation of the R&D personnel as a solution to all ills. However, an intervention in the form of better understanding the problem in the overall organisational context was made. This resulted in addressing certain systemic issues and factors affecting inter divisional collaborating initiatives. The process primarily revolved around getting common understanding of the issues amongst all stakeholders and developing a process of reward to the satisfaction of all. The process heavily relied on the methodology of SSM, though only the basic principles were taken help of and not the process in its entirety. Some details are provided below.

The organization (Chief executive and the management Team) thought of introducing an incentive system in the R&D division which will help retain the people due to higher earnings and will result in improved R&D performance. External intervention was sought for the purpose. At the outset it was realised that it was not merely an issue of paying higher to the R&D personnel but to enhance the role of R&D and its effective contribution to the growth of the organisation. This was sold to the top management and a process was set in motion to achieve the same. The basic principles of Soft OR was put in place.

C	The R&D personnel and the organisation as whole
A	The R&D personnel and Top management of the organisation
T	Expectation of higher salary by R&D personnel → Expectation met High resignation level of R&D personnel → resignation level reduced Performance of R&D not up to expectation → R&D performance enhanced
W	Competitive pressure on the organisation. Need of greater role by R&D
O	R&D Division and top management of the organisation
E	Competitive pressure. Many options for R&D personnel

A participative process was set in motion in the R&D division. It was decided that a reward system will be put in place which will facilitate the R&D personnel to contribute their best and get rewarded based on their performance. An acceptable definition of good reward system was put in place (by the top management and the study team) as one which will be appreciated (accepted) by those who are not rewarded adequately.

A ground rule was set in motion that an every stage all the concerns of every individual R&D personnel will be addressed to their satisfaction, before taking another step forward. Such a process resulted in a very long duration in finalising the reward scheme. However, the benefit of the scheme was worth the long duration.

The basic process relied on transparency and involvement (agreement) of all. The R&D personnel decided the parameters for the reward system, relative weight of the parameters, standard performance level in all the parameters, quantum of reward and such other issues.

The outcome was highly encouraging. The personnel deserting the organisation reduced substantially; the time to develop new product came down and similar other benefits were derived.

Learning: Transparency and rational basis can make the customer agree to an action plan, even though this may sometime results in sufferings for the customer.

There are similar other situations where soft OR has been used to get a change process in place to achieve the desired objective to the satisfaction of all. Two cases are worth mentioning.

In one of them the enterprise based societal issues were addressed successfully to turn around a major manufacturing unit from being on the verge of closure to a successful profit making enterprise through a process of involving wider enterprise community. (Tripathy 1998).

A similar process was employed to close down a loss making unit. This was done by generating and implementing an alternative collectively which takes care of the concerns of all the customers and that of the owner.

We have come across similar other cases where the concepts of the soft OR was employed (rather unknowingly) to have the desired outcome. One of them is quoted as one of the most successful implementation of ERP in the Asia-Pacific region and the other resulted in a Steel Unit becoming the lowest cost steel producer in the world.

The above problem situations demonstrates that well thought out approaches, taking into account the various conceptual frameworks of problem structuring methods can help in a desirable solution in the case of problems which are soft in nature but may have hard impact on the system. These methods help in greater understanding and facilitate moving towards a solution. The desired solution is less likely to be an optimal one but more a satisfying one. It is likely to be more implementable and sustainable. The person intervening in the process or the facilitator should not look forward to taking credit, but should work with a missionary zeal. Managing Change and Participatory method are the essence of the process. Not to forget the background modeling exercise to arrive at desirable outcome.

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