Systematic Management
CASE STUDY

Harnessing Innovation

Generating 40% more impact from Research and Development

Profile

Smith & Nephew Group Research Centre (GRC) is the corporate research and development facility of a Healthcare company focusing on high-technology products. It employs 200 people in the development of new technology and novel product concepts for a number of different markets. Their focus is on radical longer-term technical solutions, which they develop in close cooperation with the operating divisions, who then have responsibility for developing the final product and for marketing and manufacturing it profitably.

Issues

The development of radical new technologies is inherently risky. Success can bring a massive payback of many times the original investment, but many of the programmes never reach this point - technical and commercial uncertainties undermine their practicality well before they are launched as products. In addition, programmes can be several years long and each piece of work is unique in many different ways. Because of these factors, the management of performance is a particularly difficult issue (and often a source of contention) and as a consequence it is difficult to address the many sources of inefficiency that are often inherent in such operations.

Objective

While each research programme is unique, there are a number of metaprocesses (processes which determine how the work may be best undertaken) that are reasonably consistent and can be developed to reflect best practice (see the diagram on the right). Unfortunately in many scientific communities the focus of interest is almost entirely on the technical challenges - the currency of conversation tends to be discoveries and achievements, with little mind being paid to the efficiency of the approach.

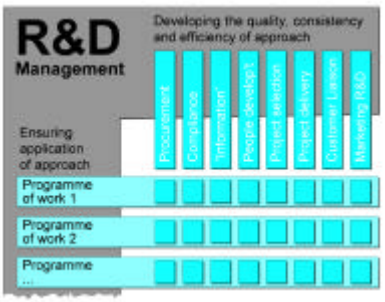

Fig. 1 How metaprocesses influence research and development programmes

GRC wanted to use QFD* to explore exactly how these metaprocesses could leverage their performance of their objectives, and then to gain better control of the organisation through them. Contrary to the fear that process-emphasis can limit creativity, they felt QFD could enable them to develop the metaprocesses to stimulate an increase in creativity and innovation as part of a drive to improve performance and efficiency.

Coincidentally, at about the same time the parent organisation had grown concerned about value for money, and there was increasing pressure for GRC to justify its performance in this regard.

Approach

Accommodating the scientific perspective

A number of the management team were particularly confident in their own thinking and approach, and were deeply mistrustful, and even cynical, of management theories and business consultancy in general. However, it was vital that these people were won over if the conclusions were to be successfully cascaded down into the organisation.

Accordingly, their own scientific disciplines and expertise was used to draw out an approach to managing the business that they could feel comfortable with. In the event, the conclusion was little different from the originally intended approach, good management practice is actually very logical, but the management team could now understand and appreciate it on their own terms.

QFD is a powerful methodology for determining objectives and for mapping out appropriate strategies to deliver them. For a more complete explanation of QFD, read the accompanying overview: 'Transforming Management Performance' available without charge from www.tesseracts.com

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Determining objectives

The objectives of the research organisation had grown unclear as the parent organisation had grown and developed around it, and as a result there were almost as many different perspectives on the role of the organisation, and the relative priorities of any objectives therein, as there were members of the management team. To address this, the management team wrote out what they individually saw as the objectives, grouped them together where appropriate, and then used them to develop a Why-How chart. The resulting discussions did much to clarify a number of misconceptions, and to reconcile the different perspectives into one common, and commonly understood, set of objectives (shown by the blue band in the Why-How chart diagram below).

Fig. 2 Why-How Chart for Smith & Nephew GRC

Measures were developed for the objectives using the output from the 'competition question'*. This proved quite contentious in practice; scientific communities often pride themselves on the clarity and unambiguous nature of their conclusions, and they are very sensitive to ensuring they are able to defend their conclusions from criticism (which is traditionally a key form of quality control in scientific institutions). However, the nature of most practical business measurement is that it is at best a good indicator of future outcomes; the more one attempts to make it universally incontrovertible, the more impractical, burdensome and bureaucratic it becomes. In the end practicality won out, but only after several weeks of frustration and wasted energy.

The competition question is a method for getting people to think through what is most important in their own organisation by asking them to identify criteria for judging the best of similar organisations. For more information see page 56 of 'Managing by Design', available through www. tesseracts.com

To avoid target-setting inducing the same degree of academic debate as the measures had, which it was clearly threatening to do, the Managing Director cut across the discussions with a mandate of a 50% improvement target on all measures. While this would NOT normally be a recommended strategy, it was exactly the right thing to do at this time and in this particular situation, and after an initial backlash, far more energy was channelled into making progress far quicker than if the targets had been left open to debate.

Developing the processes of research

The approach taken to identifying the metaprocesses was indicative of, and sympathetic to, the culture of the organisation. All of the main activities within GRC were written on separate sticky-notes and three sets of the notes were developed, one complete set for each syndicate group who would work on the process model. The syndicate groups were then asked to use the sticky-notes to group activities into sets of 'processes' which they felt reflected a productive and insightful way of viewing and managing the business. The syndicate groups put the sticky-notes together in different ways to create what they saw as sensible affinities and relationships between the activities.

Each of the three models was presented, and the whole group reviewed each model in terms of its strengths and weaknesses for managing performance. These were listed as two columns on a flipchart beside each model. The group then decided, on the basis of this, which model would provide the best start point for incorporating the best ideas round the room (not necessarily the best model in its own right). Once this had been agreed, the group worked through the flipcharted weaknesses of the model to refine it with the perceived strengths of the other models. The end result was a process model which had clear potential to help the group manage organisational performance, and which was owned by the whole management team.

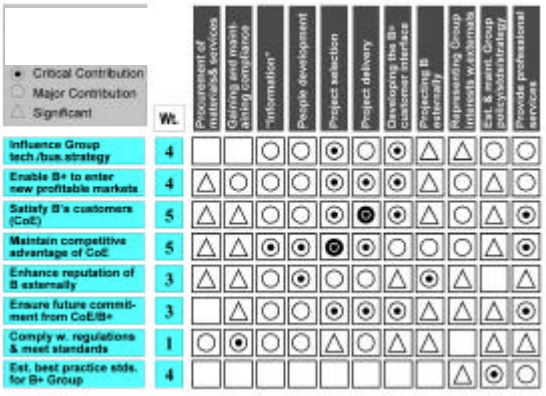

Fig. 3 QFD for Smith & Nephew GRC

Exploring the potential of the processes

The grid of the QFD was developed in a conventional manner, using definitions of 'critical', 'major', 'significant' and 'not-significant' for the contribution each process made to the delivery of each objective (marked

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respectively with a bulls-eye, a circle, a triangle and a blank). Sadly, these definitions proved too ambiguous, and while they succeeded in generating good debate they were insufficiently rigorously defined to get good differentiation in the scoring. This became obvious when the team came to discuss the impact of 'Project Delivery' on 'Satisfying Customers' when they had already defined other far less important relationships as 'critical'. Going back to reconsider the earlier relationships was not an option; they had already spent three hours on the grid and the psychological impact of starting-over would have wrecked the whole thing. Instead, the management team was allowed to 'play-their-joker' (an idea drawn from a TV game show called 'Jeux Sans Frontiers') and double the points of that specific relationship (and as it transpired one other relationship later in the grid). The end result was a working QFD diagram, continued productive discussions, and a surprisingly happy management team; perhaps because they felt more in control of the process that was being applied to them.

Deploying responsibility for the objectives

Process teams were appointed to take responsibility of managing the processes. Their first task was to develop objectives and performance targets for their processes that reflected the needs of the QFD and the potential of their process to address it (as defined by the grid relationships and the associated discussions). They were then to relate these back to the QFD objectives using what they called a 'Matrix B' and to agree their conclusions with the management team.

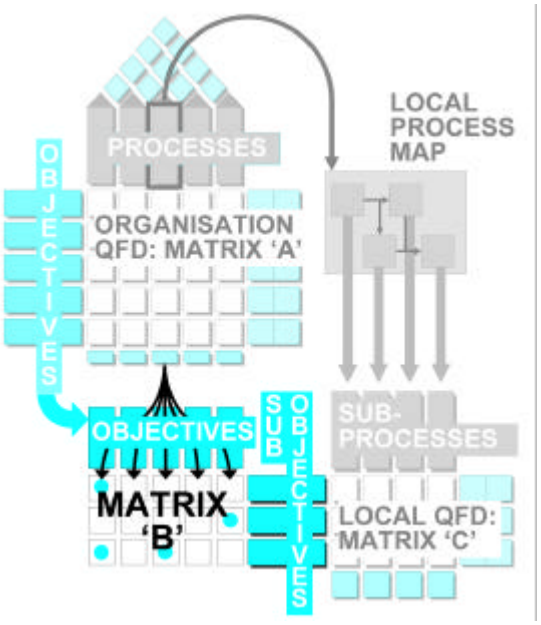

Fig. 4 Reconciling local process QFDs with GRC's top level QFD

'Matrix B' was a QFD type grid which listed the organisation's objectives down the left hand side, and the process objectives along the top, and mapped out the contribution of each process objective to each organisational objective using the QFD relationship symbols. This proved a useful device in getting each process team to reflect back on their relationships in the QFD and to ensure that they had developed objectives to fulfil those relationships.

Each process then went on to develop its own process QFD, which they called 'Matrix C', and from there to identify how the process needed to be developed in order to ensure that the top-level performance objectives were met. Progress and performance were managed on a regular basis in the monthly management meeting. The overall structure of the implementation process is shown below.

Fig. 5 Implementation process flow chart

Reviewing progress

Despite the challenging nature of the top-level performance targets, at the end of the year they were at least 80% met in 80% of the objectives. However, cultural differences between the management approach and the scientific perspective continued to dog progress, and as part of the proposed annual review it was agreed to address this issue directly.

The Review and Audit was scheduled for a point some eighteen months after the work had started, and consisted of customer and employee surveys, both by questionnaire and by interview. The results were fed-back to a sub-group of the management team and clearly illustrated two main interrelated problems. The first was that there was within the organisation a core of talented but deeply cynical people who consistently undermined and disrupted the process. Termed the 'dirty dozen', their common features were a degree of arrogance about their own abilities and insights, and an evasion of any system which might 'call them to account'. The second, and closely related, issue was that it was clear that management had not created a clear understanding of their own values within the organisation, and as a result the 'dirty dozen' were getting much more air-time with a far clearer agenda.

The Review and Audit Workshop was structured to spend one day on re-setting the objectives for the following year, and one day on addressing the two cultural issues.

Addressing cultural issues

The issue of management values was tackled by sticking up flipcharts around the room; on each flipchart was a summary from the interviews of what each manager's subordinates felt their manager valued in their behaviour

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and approach. None of the flipcharts was titled, and each reflected a mixture of different things, very little of which was to do with systematically driving up performance through the processes and the QFD. To lighten up the event managers were awarded one point for each of their sixteen colleagues' flipcharts that they could identify, and ten points for their own, with a prize for the winner. Every manager identified their own and well over half of their colleagues. The workshop then moved onto what they wanted to appear on their flipcharts, and what they needed to do to have that happen; tackling 'dirty dozen' behaviours was an integral part of working that through.

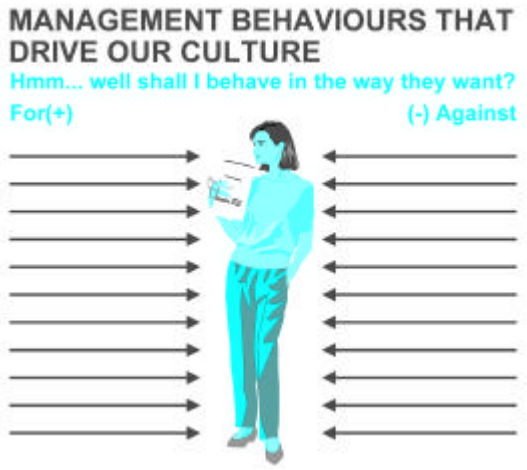

Fig. 6 Force field diagram for exploring the culture at GRC

The tool used to think through the management values and behaviours was the force-field analysis, shown in the diagram on the left. With this tool, the managers first of all explored the drivers of behaviour in the organisation, and then reflected how they needed to bias the positive forces to change the equilibrium that existed.

After the workshop, the culture began to change, and gradually the 'dirty dozen' began either to change with it, or to leave the organisation altogether.

The success of QFD in improving R&D performance has since begun to lead to its adoption in the operating divisions, and also in parts of head office.

QFD has allowed us to truly understand, what we do, whether we should be doing it, and how we can do it better. It has given us a clear understanding of what we need to achieve, at all levels of the organisation, and helped us to work as a team to deliver it. It has improved my performance, that of teams I work with and the company as a whole. I know of no other management tool that would have achieved what QFD has done for us.

Len Pendle, HR Director, Smith & Nephew Group

We see QFD simply as the mechanism by which we can more effectively live our visions and values and bring what can often seem abstract to employees, into real focus in their daily lives. Applying discipline to management activity is not easy, as we tend to see it as a natural gift; only when methodology is applied do we appreciate what can really be achieved.

Gareth Lloyd-Jones, Managing Director, Smith & Nephew Group Research Centre

To learn more about systematic approaches to management visit www.tesseracts.com

This case study has been extracted from 'Managing by Design: Transforming Management Performance through QFD' published by Tesseracts November 2002, ISBN 0 9543021 0 9, with permission of the publishers.

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Consultancy support for the work illustrated in this case study was provided by Tesseract Management Systems, who can be contacted at:

Tesseract Management Systems Ltd., 212 Piccadilly, London W1V 9LD, Telephone + 44 (0) 20 7917 2914

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