CHAPTER VII

SUMMARY OF FINDINGS & CONCLUSIONS

I. Model-wise Data Analysis & Findings

Primary Objective a) “To study and understand the theoretical underpinnings of the integrative models, their points of departure from the functional models, their respective strengths and theoretical drawbacks” was met in the course of literature survey and is discussed in sections that describe the various models.

Findings related to primary objectives b), c) and d) (shown below) are now discussed

b) Study specific Indian experiences in the implementation of these models; factors that influenced the adoption decision, rationale for the specific choice, the implementation experience and end results.

c) Study successful implementation and its effects on retention of identity (survival) and growth.

d) Examine Mortality of the implementation and sustainability

ISO 9000

1. It was found that companies across all 3 Stages of the data collection effort had first adopted the ISO 9000 Model with the exception of the IT services organisations.

2. The ISO 9000 Model is seen to be easier applied in manufacturing organisations and in those services organisations that are not knowledge intensive. The software industry required a Model that ensured that software is written bug-free at the first iteration as repair is difficult, expensive and time-consuming. The ISO 9000 Model
has therefore been supplanted by the industry developed specific model; the SEI-CMM and the SEI-CMMi. Despite sustained industry-wide efforts to automate the process of software writing, there is still considerable requirement of human input. Paradoxically, automation efforts have resulted in the comparatively mechanical tasks of software generation being automated and therefore human skills now required are increasingly more complex. The realisation that quality of software depends largely on the quality of human input has led to the development of the SEI-PCMM model which is focussed on human capability. A few manufacturing organisations are beginning to adapt this Model for their requirements.

3. The impetus for adoption of the ISO 9000 Model has been
   - Customer mandate
   - Competitive pressure
   - Market share considerations
   - Flavour of the month

4. Most companies have reached maturity in ISO 9000 implementation in 3 to 5 years. During this period, companies have also concluded that the Model (and more specifically, the certification process) is documentation-driven and reaches the point of diminishing marginal utility in 3 to 5 years’ time.

5. In the journey towards Business Excellence, companies that do not have any organisation-wide initiative running till then find that ISO 9000 implementation is the ideal way to begin, This is because every company that embarks on this journey is also seeking certification and this involves the entry into the organisation for the first time, of an external player in the internal managerial processes. Managerial initiatives are seen by the workforce as validated when backed and driven by external
consultants. Managements find that adoption of best practices is easier to ‘sell’ when they are apparently initiated by a credible external agency.

6. Where companywide management systems are not yet in vogue, the introduction of any new system is bound to bring in precisely the kind of change that people dread. In companies with a poor record of industrial relations and consequently with a union locked into ideological positions, workers fear the opening up of job classifications and the introduction of practices such as job enlargement and job enrichment. This is precisely what top managements wish to achieve – flexibility in labour deployment. At the same time such organisations also face a situation while middle management is seen as a necessary evil, while middle managers feel that they are simply required to produce results with very little resources. The external consultant and third party auditor driven implementation of ISO 9000 is therefore seen by top managements as an excellent way to sell change to the workforce, while middle managers see the standard’s requirement that management’s function is to provide adequate resources as providing them some long sought after relief. Frequently, external auditors who visit the candidate company for certification or surveillance audits find themselves being pumped for information on best practices. A cross section of opinions from the various sets of auditors who visit the organisation helps unfreeze the position of all parties – top management, middle management and workmen.

7. Where company-wide initiatives do not as yet exist, and the process of management is seen as being driven by individual managers’ sometimes contradictory philosophies and competencies, the ISO 9000 Model’s emphasis on documentation is seen as an approach to become more process-driven and hence more replicative and standardised.
8. In terms of objective results, ISO 9000 implementation leads to
   - Reduction in defective shipments
   - Reduction in documentation errors
   - Reduction in delayed deliveries

9. In terms of subjective results, ISO 9000 implementation results in
   - Better understanding of customer requirements
   - Greater awareness on non-conformances
   - A process mind-set

10. All the companies surveyed have gone on to implement other Models subsequent to
    ISO 9000 implementation. These include the Models researched in this study - TQM,
    TPM, BPR and ERP as also others such as the Balanced Scorecard, Six Sigma, the
    Theory of Constraints, the Tata Business Excellence Model (TBEM), SEI-CMM and
    SEI-PCMM etc. However in no case has ISO 9000 been jettisoned; all other Model
    implementations are seen as building on the foundation (though not framework)
    provided by ISO 9000

**TQM**

1. Next to ISO 9000, TQM is the most widely adopted Model. Here again, as in the case
   of ISO 9000, the software companies are an exception. Formally, software services
   companies are at various maturity levels in the implementation of the SEI-CMM and
   SEI-PCMM Models which they find are more suited to the needs of their industry.
   While there is considerable common ground in the philosophical approaches of TQM
   and the CMMs, the CMMs are tighter and considerably more prescriptive in their
   approaches. The CMMs are certification driven, unlike TQM.
2. Over a period of time companies have evolved a ‘growth-path’ in their adoption of specific tools in the path to TQM. Generally the starting point is 5S, which aims at good house-keeping. Thereafter they proceed to install Quality Circles and then to implement the 7QC tools and the new 7QC tools. There is also generally an approach to implement in one department first, assimilate the learnings and then replicate unit-wide.

3. Companies have found that it makes sense to first propagate the broad philosophy of TQM first – that quality begins at the top (and hence increased top management attention to quality issues would follow,) that quality is free, that attention to quality has to be all-pervasive, that the objective is to ‘get it right first time’ and to build a sustainable organisation one has to understand the customer better than competition. There is considerable emphasis on reinforcing these principles by placing messages across multiple media. This also puts pressure on management to actually walk the talk.

4. In terms of implementation process the next step that was generally followed was to adopt specific techniques whose requirement is highlighted by the different quality circles. These techniques could include capturing the voice of the customer, statistical process control, Taguchi Methods, Six Sigma, process re-engineering (both technical and business) etc

5. As compared to ISO 9000 as implemented, the objective results that can be attributed to sincere TQM implementation are:

   - Prevention of defect generation
   - Prevention of documentation errors
   - Customer-driven definition of on-time deliveries
- Improvement in customer satisfaction

6. In terms of subjective results, TQM implementation results in
   - Better anticipation of evolving customer needs
   - Total employee involvement
   - Better understanding of process conditionalities
   - Understanding of cause and effect relationships
   - Uncovering hidden waste
   - Silo-breaking

**TPM**

1. The Japan Institute of Plant Maintenance (JIPM) which developed the methodology of TPM initially intended the approach to serve purely the maintenance needs in discrete manufacturing. Subsequently its scope was enlarged to include maintenance in continuous process industries and still further to the entire organisation through the incorporation of ‘Office TPM’ as a rival approach to TQM which was seen as American-inspired. However Indian industry has been very sceptical about the organisation-wide relevance of TPM. With maintenance as the central focus, the software industry has clearly found TPM unsuitable. Among the rest on manufacturing industry, there is a core of adopters in discrete manufacturing while continuous process industries seem less convinced of its utility. Consequently TPM adoption is considerably less compared to ISO 9000 and TQM

2. Those who have adopted TPM talk of a ‘natural’ progression across the Business Excellence approaches. They feel that organisations should first seek ISO 9000 certification, followed by TPM and then TQM. This is because TPM lays the ground
for an excellent manufacturing infrastructure, which is seen as a prerequisite for successfully implementing TQM, which embraces a whole host of techniques and is more closely linked to business results. TPM as viewed by Indian practitioners is more inward looking while TQM is more focussed on the external stakeholder.

3. All practitioners of TPM are also ISO 9000 certified, most have significant TQM practices in place and a few have also implemented the Balanced Scorecard. However, even as these companies have implemented other Models of Excellence, the thrust on TPM continues. It is thus seen as a lower level implementation whose success leads to the opportunity to adopt more sophisticated approaches which build on the lower ones.

4. Non-practitioners of TPM tend to see the Model as relevant more to discrete manufacturing than to continuous processes; however Tanfac, Indo-Gulf Fertilisers and Vikram Cement are continuous process industries who have clearly benefitted considerably from TPM implementation. However it is also apparent that organisations were somewhat deficient in good managerial practices from inception; both in terms of systems and in terms of plant design. Therefore any intervention under any framework is bound to yield results because of the low base effect.

5. Objective results that are purely attributable to TPM implementation are:
   - Reduction in equipment downtime
   - Reduction in engineering adjustment
   - Elimination of minor stoppages
   - Elimination of unplanned breaks
   - Reduction/elimination of time spent in making rejects
   - Reduction of material waste
5. The qualitative achievements of successful TPM implementation are:
   - Better understanding of the performance of plant and machinery
   - Better understanding of equipment criticality and where it is worth deploying improvement efforts and potential benefits
   - Improved teamwork and a less adversarial approach between Production and Maintenance
   - Improved procedures for changeovers and set-ups, carrying pot frequent maintenance tasks, better operator training
   - General improved workforce morale due to involvement

BPR

1. None of the Stage I and Stage II participants had undergone or were contemplating a standalone full-fledged BPR exercise. A few of the smaller participants of Stage III however had undergone a formal BPR program implemented through consultants.

2. However all Stage I and Stage II participants had at some point installed a company-wide IT platform. Business process reengineering was carried as part of the IT Change Management initiative and not labelled separately as such. With the results of such reengineering are somewhat confounded by the parallel IT system implementation, the nature of the results are so different as to make it possible to tease out one from the other. BPR results were in terms of:
   - Reduced elapsed time for business processes
   - Reduced manpower requirements
   - Reduction of handoffs
   - Worker empowerment
This is quite different from the benefits of installation of enterprise software which we will see in the section on ERP.

3. Stage I and Stage II participants had in effect effected business process reengineering in the course of TQM implementation and also as a necessary concomitant to downsizing and VRS during periods of business downturn. Another opportunity that was taken to reduce manpower and thus force reengineering was during brand/business unit sale and purchase.

4. It is clear from the above discussion that managements are aware of the need for and benefits of BPR, but try to realise them while implementing some other company wide initiative.

5. BPR does not seem to be considered as a standalone model that would lead a company towards Business Excellence.

6. BPR is generally an episodic intervention and not an ongoing effort. Conceptually it is possible to institute multiple doses of reengineering across time. Such an approach requires clear identification of trigger events. The organisations studied have no such framework in place. However most are prepared to, and do reengineer as a result of TQM efforts.

7. A formal BPR exercise is expected to bring about breakthrough change. There is however an underlying assumption that current processes are inefficient and possibly ineffective to a large degree. There is also an implicit assumption regarding organisational entropy, after a successful BPR intervention, processes immediately begin to decay either on account of poor process maintenance or because of increasing irrelevance in changing business conditions. However organisational
maturity and maturity in TQM implementation can negate the need for further rounds of BPR. We can see in the cases of Stage I the degree of importance accorded to process management. With at least an annual review of all processes, both the relevance/efficacy of existing processes and the need for new ones are constantly examined. Major BPR exercises become necessary only consequent to major structural change, such as the outsourcing of a key in-house activity, the acquisition of a new business unit or a merger.

**ERP**

1. All the six cases covered in Stage I, the seven cases in Stage II and fifteen cases in Stage III had either a full blown ERP solution operating across all departments, or had a significant functional module of an ERP solution or had functional modules from different solutions running across multiple departments. The other companies in Stage III did not have any enterprise wide IT solution.

2. In all these cases, a business process reengineering effort was undertaken as part of the IT solution implementation. The benefits of a reengineering effort have been discussed earlier and will not be repeated.

3. The single biggest set of benefits apparent is the single view of data, integration, reducing data redundancy and redundant data entry.

4. The next largest set of benefits is process automation and streamlining. As a result, service functions are managed with minimal manpower. For example certain Infosys HR units serving a business unit and having the SAP HR module deployed, function very effectively with just 1 HR person for 1000 employees.
5. Such lean manning is accomplished by a process of adopting highly inflexible policies necessitated by the impossibility of exercising discretion and coupled with a high degree of outsourcing.

6. Contrary to popular impression a good ERP implementation does not in itself reduce costs, but showcases the opportunities to do so. It is managerial action which leads to inventory cost reduction, not an ERP package per se.

7. For a Business Excellence Model, ERP does not address all business processes, though it can facilitate them. For example, customer acquisition, retention, strategy formulation etc are areas where the contribution of ERP is definitely tangential.

II INTEGRATION

From a study of a carefully considered mix of Indian companies across ownership, sectors, sizes and geographies, it is clear that ISO 9000 is seen as the entry level Model of Business Excellence. Achieving maturity in operating as a sustainably certified ISO 9000 company leads the organisation to adopt TQM. TPM where implemented, is seen as a logical precursor to TQM, though it does not seem essential. BPR and ERP are seen as essential to achieve various internal goals while still having an external focus and can be integrated with TQM in its external interface. As BPR is an event rather than a sustained process, it is not seen as a serious candidate for a Business Excellence Model and a series of ‘shots’ is seen as reactionary rather than proactive. ISO 9000 is considered rather unsuitable for software services companies who use SEI-CMM as the base level Excellence Model and overlay Six Sigma on it.

None of the Models are seen to have sufficient impact on strategy formulation. While TQM has the greatest focus on the customer, it is still incomplete in terms of strategy
formulation. Because most companies actually follow more than one Model simultaneously, the Balanced Scorecard is used as an integrating strategy implementation tool.

In terms of primary objectives b), c) and d), implementation experience and the end result has been covered. With respect to retention of identity, all units have retained their identity.

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*Fig 7.1 Model preferences across companies*

(survived). Similarly all organisations have reported continuance (zero mortality) of the Models they have implemented.
With respect to the secondary objectives, a clear ‘order of progression’ seems to be emerging. It is clear also from the discussion that as a philosophy, TQM is the most favoured Model and produces the most sustainable results if implemented sincerely. However TQM is still a more conceptual model than an immediately practical one and mature organisations have used the Balanced Scorecard to integrate the various tools that collectively go under the umbrella of TQM.

If we consider the model preferences of the companies studied in Stage I (Fig 7.1) we can see that every organisation has implemented multiple models with a clear internal understanding of the role and limitations of each in their own individual context. We also see that the greater an organisation’s participation in a particular value chain, the larger will the number of implemented models be. HPI has the least role in its value chain compared to the others in that it has little role in ‘manufacturing’ its products, most are simply outsourced. Therefore a considerable degree of complexity is avoided. On the other hand, other organisations are present in their respective industry value chains to a much greater degree.

However all these models are strategy implementation tools and contribute only peripherally to strategy formulation. TQM lays considerable emphasis on understanding the customer, but does not of itself provide any tools to do so in a strategic manner. While ISO 9000 and its offshoots such as TS 16949 now play a great emphasis on knowing the customer’s requirement, again there is no prescriptive framework on the methodology. However the biggest argument is that the choice of which customers to serve and what markets to operate in is the strategic question that needs to be first answered, and none of the Models address the issue. Rather, once this question is answered, the Models then provide approaches for implementation that work well in certain contexts and poorly in others. We
see this in the very different approaches to implementing TQM in the study of the 40 TQM implementations.

The key conclusions of this research based on the interviews of the 40 firms with more advanced TQM systems are as follows:

- Widespread training was generally the first approach that was clearly associated with corporate-wide deployment of TQM. While training was the most common clear beginning, in some cases other events, including changes in new product development, changes in customer measurement, internal self assessments (e.g., Baldrige assessments), or changes in supplier assessment/audits, also marked the company-wide beginning for some companies. Other events also tend to be associated with the beginning of the TQM systems such as creation of quality councils or steering committees of development of mission, vision, values, and quality policy statements.

- The influence of the Crosby quality management system appears to be huge relative to the influence of the other gurus (particularly Deming and Juran), particularly in terms of beginning deployment of TQM. Companies that begin with a Crosby-based approach can develop their TQM systems into mature approaches as judged against the Baldrige Criteria.

- None of the “gurus” approaches appears to be sustainable for more than a few years (generally about three). Development of well-developed systems appears to require multiple phases and approaches
that extend beyond the conceptualization provided by the "gurus." It should also be noted, however, that mature systems can be developed starting with any of the gurus’ approaches. A key characteristic for success in the development of the TQM system appears to be a persistence that leads to multiple phases of development and integration of a variety of approaches.

III Future Research Directions

There is as yet no Model of Business Excellence that can be considered universal in the sense that:

- It can be implemented across sectors/geographies and cultures
- Covers both strategy formulation and implementation
- It possesses temporal validity

One stream of research is study the models covered in this report more extensively both longitudinally and across sectors to validate more clearly the natural order of progression that seems to emerge in model implementation as well as the sector specific nature of some of them. An emerging field of study which is quite virgin is that of ‘business models’ that organisations employ. ‘Business Models as referred to by companies prescribe how the specific organisation not only captures value but also creates value. This terminology is very much in use with venture capitalists/angel investors and private equity. To the extent that a business model is a holistic picture of how the organisation wishes to manage itself and function, it would be very useful to see what common factors and what unique parameters go to define a ‘business model’ and arrive at general design principles.