

Development In Business Simulation & Experiential Exercises, Volume 18, 1991

Modeling Total Quality Into Business Simulations -A Demonstration-

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ABSTRACT

This one and a half-hour session will focus on incorporating Total Quality Management and (TQM) elements into manufacturing-oriented strategy-based business simulations.

This session will be composed of five components: (i) an overview of Total Quality Management (TQM), (ii) a framework for modeling TQM into Business Policy Simulations, (iii) summary results of an eight period simulation, (iv) a "live" demonstration of TQM in DECIDE II - A Total Enterprise Simulation with Total Quality Elements, and (v) Summary and open discussion.

(i) INTRODUCTION TO TOTAL QUALITY MANAGEMENT (TQM) (15 minutes)

Total Quality Management (TQM) is a driving force in industry today. Both profit and non-profit, service- and manufacturing-oriented organizations are striving to improve quality and customer satisfaction.

In this portion of the demonstration, the evolution and the key of elements of total quality management will be explored. The need for modeling TQM into strategy simulations will be discussed.

(ii) A FRAMEWORK FOR MODELING TQM INTO STRATEGY-ORIENTED SIMULATIONS (30 minutes)

In this portion, a framework for modeling TQM into a manufacturing-oriented total enterprise simulation will be explored. The framework involves:

- o The Demand and the Cost Sides of the Algorithm.
- o Emphasis on Total Quality Costs
 - Prevention Cost
 - Appraisal Cost
 - Failure - External & Internal.
- o Two Levels of Play. Level I - Emphasis on Prevention Level II - Emphasis on Prevention & Statistical Process Control (SPC)
- o Modeling SPC and Acceptance Sampling.
- o Stable Continuous Improvement Functions.

(iii) SUMMARY RESULTS OF AN EIGHT PERIOD SIMULATION (15 minutes)

The results of actual game play will be presented in summary form. During the game play the teams were required to make a variety of decisions including: pricing, promotion, product development, customer service, production and labor scheduled, total quality budgets, statistical process control, acceptance sampling, market and economic research, capital investment, material purchase, dividend policy.

The analysis shows that a well-thought out and implemented TQM strategy, tied to the overall over strategic plan, will give a firm a competitive advantage. Teams with either overzealous or inadequate TQM strategies failed to remain competitive for the entire eight period horizon.

(iv) A DEMONSTRATION OF DECIDE II WITH TQM (15 minutes)

The audience, as a group, will have the opportunity to use the decision support package for DECIDE II and make a set of TQM decisions. A computer run will be made, results presented (with a Data Show/ PC Viewer projector), and discussed.

(v) SUMMARY AND OPEN DISCUSSION (15 Minutes)

During the summary and open discussion further enhancements, as well as the shortcomings, of the model will be discussed.

MAJOR REFERENCES

- Draper, J. & Klingman J., Mathematical Analysis, 1967, Harper and Row: NY.
- Garvin, D. Managing quality, 1988 The Free Press: NY.
- Grant, E & Leavenworth R., Statistical quality Control, 1972, McGraw Hill: NY.