Using game theory for producing quality plans: A Pac-Man simulation experiment

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Abstract

Organizational development frameworks like total quality management (TQM) are known for creating conflicts between change agents and managers. Some researchers believe that playing video games has an impact on how people make decisions and handle conflicts. The purpose of this paper is to identify and investigate a Pac-Man model for developing optimal TQM strategies. An empirical study has been carried out as discourse analysis in terms of using the video game of Pac-Man as a theoretical lens for describing conflicts and progress in a five year TQM development project. The results are presented as simulations of game play, suggesting how Pac-Man strategies can be used as TQM strategies. Three strategies are identified as (1) finding and following the "patterns" in the organizational maze that can be audited without upsetting management, (2) eating "power pellets" when the organization is in a receptive mode, and (3) eating "bonus fruits" of management appreciation whenever it appears.

Key words: Total quality management, organizational change, Pac-Man, game theory

Introduction

In his analysis of management science (operational research, OR) in business use, Beer (1968, pp. 22-23) describes the conflict between managers and scientists as a conflict between "natural enemies". Scientists want to use a scientific approach for solving business problems, but know less about business from a practical perspective. Managers, on the other hand, see a threat to dominion in the shape of the scientists. As a response to this problem, management science has expanded beyond the positivist framework of operational research and systems analysis in applying theories from psychology, sociology and philosophy for improving the ways of analyzing political conflicts (Checkland, 1981; Jackson, 2000; Mingers, 2006). In order to succeed with OR frameworks like total quality management (TQM), a technical education in OR is not sufficient, it is also necessary to develop political skills.

Beck and Wade (2006) argue that people growing up with computers and video games have developed certain skills and ways of seeing the world that is radically different from that of an older generation. Even though game theory has since its conception been seen as an integrated part of operational research and systems theory (Churchman et al, 1957; von Bertalanffy, 1968; Rapoport, 1986), game theory is only one of many theoretical perspectives informing research on game design (Salen & Zimmerman, 2004).