

TEAM COMMUNICATION AND PERFORMANCE: A TEMPORAL PERSPECTIVE

Ashraf Shirani, MIS Department, College of Business, San Jose State University, San Jose, CA 95192, 408-924-3521, shirani_a@cob.sjsu.edu

Malu Roldan, MIS Department, College of Business, San Jose State University, San Jose, CA 95192, 408-924-3539, roldan_m@cob.sjsu.edu

Mohammed H.A. Tafti, BCIS/QM Department, Zarb School of Business, Hofstra University, Hempstead, NY, 11549, 516-463-5720, acsmht@hofstra.edu

ABSTRACT

This paper reports results from an exploratory study of 13 information technology (IT) projects teams. The study examined two time-based team development effects - punctuated equilibrium and social entrainment - and their effect on task performance. Seven teams were given multiple deadlines to commensurate with various phases of their projects, while other six had one final deadline to meet. Results indicate that teams with a single deadline exhibited weak punctuated equilibrium effects. Teams with multiple deadlines performed better than those with single deadlines.

INTRODUCTION

Project teams must work to achieve their objectives within given time frames and meet the deadlines. How teams pay attention to time and pace their activities have important implications for their productivity, quality of work, and communication among members. Past research in pacing behavior of task-oriented teams suggests that teams increase task activity as deadlines get near and often engage in task transitions near the midpoint to a deadline [3]. Research further suggests that given a specific amount of time to complete a project, members of work groups adjust their work behavior to “fit” the time available [7]. If the time is scarce, the quality of group work and interpersonal issues among members suffer. On the other hand, if the given amount of time is in excess of what is needed, groups often “stretch” their work and use up all the time available, with no guarantee of better quality of output.

Two streams of research are prominent. One of these streams, punctuated equilibrium, has examined the issue from the perspective of group development and task activity as they unfold over an extended period of time. The other, social entrainment, sees time as a tool for adaptation and pacing of team activity. It also examines how a sequence of time segments may be used to influence team behavior. Considering significant findings of the two research streams together provided the research incentive and motivation for this study, which sought to explore answers to the following research questions:

1. Do IT project teams (both with a single and multiple deadlines) experience midpoint transitions associated with punctuated equilibrium?
2. Are there any discernable differences in the quality of work between teams with a single deadline and those with multiple ones?

PRIOR RESEARCH

Teams working on long-term projects experience changes in task activity and group behavior over time. The pattern of these changes is generally associated with the process of group development. Group development models have been an active area of study in the past three decades. Time-based group development is an important sub-classification of such models; it focuses on the temporal issues such as scarcity of time and awareness of deadlines by group members [1]. Punctuated equilibrium and social entrainment represent two of the major time-based models.

Based on studies of naturally occurring groups and lab experiments, scholars have proposed a two-phase model of group development [3] [4]. It suggests that teams experience major transitions in levels of their activity and group behavior near the temporal midpoint of a deadline. Teams alternate between relatively long periods of continuity and incremental change during the first half, and periods of reorientation and intense activity during the second. Such changes are triggered by the realization of approaching deadlines and consequent time pressures. Some researchers [2], however, argue that organizational work teams experience continuous change rather than one-time, midpoint transitions from relative calm to intense activity.

McGrath and Kelly [5] [6] [7] view the influence of time on project teams in both social and temporal contexts. A key aspect of their time-interaction-performance (TIP) theory is the concept of social entrainment, which refers to synchronization of various group processes with temporal signals such as deadlines and time limits. Performance and coordination of various task activities is influenced internally in individual members through time-based biological and cognitive processes, and externally among team members by the realization of impending deadlines.

METHODOLOGY

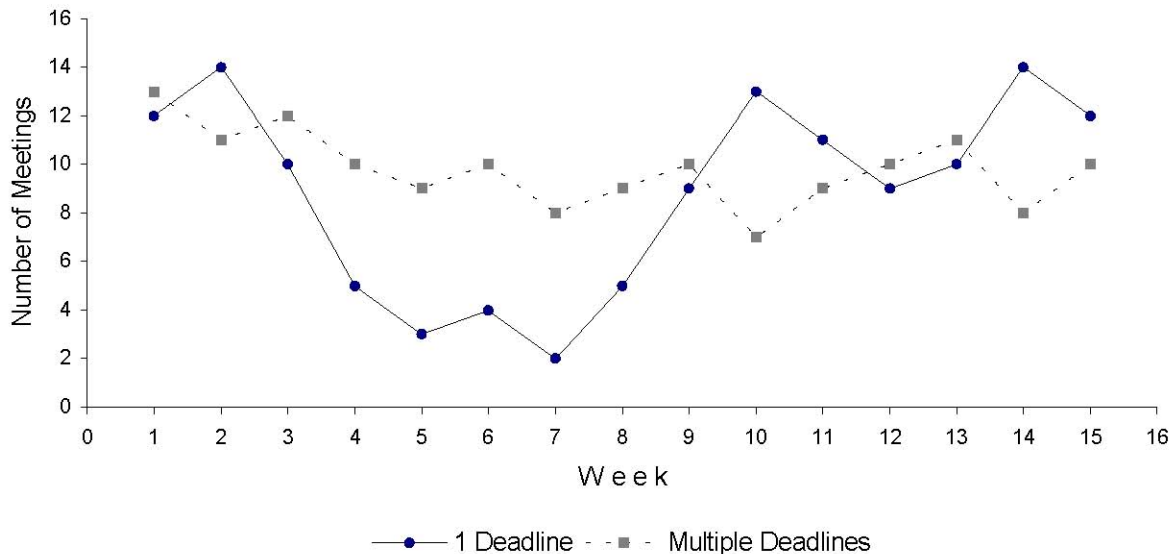
Thirteen, 3- and 4-person teams of students worked on information technology (IT) projects for 15 weeks. Seven teams had one extended deadline for completion of their projects, while other six were given multiple deadlines to complete segmented portions of their projects. Due to entrainment effects, we expected the former set of teams to perform better than the latter one. The projects involved conducting company and industry analyses for the selected firm, report on the firm's current business strategy in deploying information technology, and recommending strategic and operational measures to align the firm's IS strategy with its business objectives. Two dependent measures were used. One of the measures was team communication. Frequency of team meetings was used as a surrogate for this measure. Teams submitted a standard meeting report after each meeting. The report contained information including date, time and length of the meeting, issues or problems discussed, alternatives considered, decisions made, and type of work done. The second measure, task performance, was assessed using each team's percent score on its project work.

RESULTS AND DISCUSSION

Due to the small sample size for this exploratory study, no hypotheses were formulated or tested. Figure 1 depicts scatter plots of the meeting activity in the two experimental conditions. A visual inspection of Figure 1 confirms that temporal patterns of team meetings (or team communication) under the two conditions are different. Teams with a single deadline had quite a busy meeting schedule during the initial two weeks, followed by a significant drop in activity. Task activity levels began to increase prior to the midpoint (week 7) and continued to be high, though at an uncertain rate. Most teams held one or

more initial meetings to assess the extent of work involved and to map out their respective courses of action. Realizing that submission deadline was not imminent, some teams then slacked off. On average, teams with multiple deadlines, with each time limit associated with a phase of their project, kept a somewhat steady schedule throughout the entire period. These teams may also have experienced midpoint transitions but that could only be confirmed after conducting an analysis of their daily activity. A comprehensive study is planned for this purpose.

Figure 1: Meeting Activity of Teams with One and Multiple Deadlines



The mean standardized score for the teams with single deadlines was 84.4%, and for those with multiple deadlines, it was 85.7%. This indicates a modest gain for teams with multiple deadlines. As suggested by the social entrainment paradigm, repeated temporal signals can induce a team response and set a pattern or pace that may last for the entire duration of the project. Perhaps with consistent work activity and attention to time schedules, these teams were able to produce a modestly better quality output.

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