

Chapter 7

Process Theory: Components and Guidelines for Development

Martha García-Murillo
Syracuse University, USA

Ezgi Nur Gozen
Syracuse University, USA

ABSTRACT

Because the IS field is grounded in its applications to organizations, the challenge is to develop a coherent theoretical body of scholarly research, while also remaining relevant to the needs of the practitioner community. In this effort, the purpose of this chapter is to provide scholars with a general understanding of process theories and a taxonomy to provide some direction about how to make contributions to the theoretical legacy, particularly through often-ignored process theories, which are also relevant to practice.

INTRODUCTION

The purpose of this chapter is to provide scholars with a general understanding of process theories and a taxonomy of the components to take into consideration when developing this type of theory. The information systems (IS) field, like many other social activities, is filled with events involving interrelated entities, which leads to the many problems and outcomes that

we study. In this case, we consider an event to be an occurrence that can be affected by a set of circumstances (“Wordnet,” 2010). Keen (1997) calculated that in a large company like IBM, there can be an excess of 300 processes. These include, for example, customer service, regulatory compliance, customer retention marketing, records management, purchasing, etc. Most, if not all, require information systems. However, while many of the issues that touch information systems also involve processes, much of the IS research analyses events as if they were static.

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To give an example, Durmusoglu and Barczak (2011) examine the impact of IT on new product development (NPD) processes. They highlight three main phases: discovery, development and commercialization. The paper focuses on these processes, but the authors, instead of looking at the interactions that exist between them and the impact that technology has on NPD, use a survey which asked participants to indicate which tools they use in which process and to self-evaluate the impact of these technologies on the success of an NPD initiative. The study ignores the dynamic nature of this work and identifies technology like e-mail and on-line collaboration tools as factors that affect these three isolated stages of the process. The main reason for this is that it is empirically easier to test models where dependencies across relevant entities and time elements exist. As Pentland et al. (1999) indicate, processes are difficult to study because they are difficult to observe at any given point or location. They take place over days or weeks and often involve multiple parties, who may not even be in the same geographic location.

Information systems is still a young field, and academics are still debating whether or not IS should be considered a discipline. Because the IS field is grounded in its applications to organizations, it cannot be entirely theoretical. In an applied field, as Taylor, Dillon, and Van Wingen (2010) state, the challenge is to develop a coherent theoretical body of scholarly research, while also remaining relevant to the needs of the practitioner community. The strength of the IS discipline derives as much from its contributions to practice as it does from its conceptual derivations. This combination is most often found in theoretical frameworks that reflect the manner in which information systems and technologies are developed, used, misused, and implemented, and the manner in which they affect the operations of an organization.

Because of the interplay between theory and practice, the purpose of this chapter is to present a taxonomy that can provide some direction about how we can make contributions to our theoretical

legacy, particularly through often-ignored process theories, which are also relevant to practice. We identify and define elements which we have identified from process studies in IS and from the contributions of scholars who have written about processes. To clarify: “Process theories explain how outcomes of interest develop through a sequence of events” (Crowston, 2003a). Similarly Keen (1997) defines process theories as “a specific ordering of work activities across time and space, with a beginning, and end, and clearly identified inputs and outputs.” More modern versions also include the coordination of entities involved in a process (Keen, 1997). The next section of the chapter provides a detailed definition and explanation of process theories.

Normally, when we think of theoretical research, we tend to think of a highly abstract exercise with little relevance to practice. This chapter is much more practical in nature; the objective is to help researchers think about the elements they should consider when developing a process theory to explain phenomena. Ultimately, we hope to aid scholars to venture into the area of process theory by providing them with a taxonomy that they can use to ensure that their contributions are based on systematic thinking about process components.

Many of the references that we consulted for this chapter are highly technical, and some are highly mathematical. However, the purpose of this chapter is not to present formal proofs for techniques, but instead to provide tools that can help in the construction of process theories. From the references that are highly mathematical, we took the relevant concepts and explained them more simply.

This work differs from that done by Malone and by scholars who work at, or who have followed the lines of research from the MIT Center of Coordination Science, in that in their case the purpose is to help researchers map a process, while in this study the objective is to help generate theories from processes. There are, of course, overlaps between their work and this, which, when appropriate, are noted here.

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