Chapter 4
Toward a Unified Model of Information Systems Development Success

Keng Siau
University of Nebraska-Lincoln, USA

Yoanna Long
Colorado State University Pueblo, USA

Min Ling
University of Nebraska-Lincoln, USA

ABSTRACT

Information systems development (ISD) is a complex process involving interconnected resources, stake holders, and outcomes. Understanding factors contributing to ISD success has attracted keen interest from both researchers and practitioners, and many research studies have been published in this area. However, most studies focus on one or two factors affecting ISD success. A holistic view of factors impacting ISD success is missing. This paper synthesizes past research on the topic and proposes a unified model on ISD success through a systematic and comprehensive literature review. The unified model highlights that ISD is a complex and interactive process involving individual, team, and organization factors, as well as ISD methodology. These factors impact the ISD process as well as its success.

1. INTRODUCTION

Information systems development (ISD) is a complex process involving interconnected resources, stake holders, and outcomes. An ISD project can be time consuming and expensive to undertake. A better understanding of ISD and the factors

impacting ISD success is crucial for both practitioners and researchers to ensure the success of ISD projects. Understanding ISD success requires the recognition of the: (a) ISD process, (b) ISD product (outcome), (c) ISD participants, (d) ISD groups, (e) ISD organizational environment, (f) ISD methodology, and (g) interaction between these entities. Due to the intricate and interactive nature of the ISD, past studies usually focused on

one or two factors, such as individual personality (e.g., Kaiser & Bostrom, 1982), task complexity (e.g., McKeen *et al.*, 1994), and top management support (e.g., Etton *et al.*, 2000; Sauer, 1993). Although much research has been done, a holistic view of the factors contributing to ISD success is missing. This research synthesizes existing literature on ISD and proposes a unified model depicting factors identified in the literature that affects ISD success.

In this research, we developed an integrated and comprehensive unified model for ISD success. The unified model involves three levels of input variables—individual, team, and organization. The ISD process is affected by the ISD methodology. The output variable is ISD success.

The paper is organized as follows. First, a systematic literature review of factors impacting ISD performance is discussed. Based on the syntheses of the literature review, the paper proposes a unified model on ISD success. Finally, the paper concludes with a discussion on the implications of the unified model on research and practice, and suggests future research directions.

2. LITERATURE REVIEW

This section first introduces the Input-Process-Output model, which forms the foundation of the unified model. The section reviews literature on input factors from three levels (i.e., individual, team, and organizational factors), process factors (i.e., knowledge sharing, innovation, and systems development methodology), and output factors (i.e., systems usage and user satisfaction).

2.1. Input-Process-Output Model

The classic Input-Process-Output model (Hackman, 1987; McGrath, 1984) provides a systematic way to view general working processes. The Input-Process-Output model presents the basic idea that inputs lead to processes that, in turn, lead to outcomes. This classic framework has been widely used in the IS/IT area and provides the conceptual underpinnings to develop the unified model on ISD success in this research.

Information systems development (ISD) is a complex, adaptive, and dynamic process. Information Systems (IS) literature has long studied factors impacting ISD success. However, different researchers address different research issues focusing on different factors. There is a need to provide a holistic view of the factors impacting ISD success and to provide a unified model to guide future research.

To investigate the research question of ISD success in a systematic way, we shall follow the conceptual framework of the Input-Process-Output model, and develop a unified ISD success model by identifying three sets of factors associated with input, process, and output.

2.2. Input Variables

Three levels of factors—individual, team, and organization—emerged from the literature review.

2.2.1. Individual Factors

A number of individual characteristics such as personality, cognitive style, problem-solving style, skills, experience, expectations, as well as user participation and involvement, have been suggested in the literature as factors affecting the success of ISD. The following provides a discussion on these factors:

Personality

Personality type theory is based on the work of Jung (1923). According to personality type theory, people who possess more accepting personalities are more willing to consider different perspectives. Some people are risk-averse while others are stimulated by taking risks. Still others are motivated by the challenge of an unsolved

Related Content

SeaDataNet: Towards a Pan-European Infrastructure for Marine and Ocean Data Management
Dick Schaap (2017). *Oceanographic and Marine Cross-Domain Data Management for Sustainable Development (pp. 155-177).*
www.irma-international.org/chapter/seadatanet/166840

Antecedents of Organizational Agility During Business Uncertainty in Noninformation Technology Sectors
Dinesh Batra (2022). *Journal of Database Management (pp. 1-22).*
www.irma-international.org/article/antecedents-of-organizational-agility-during-business-uncertainty-in-noninformation-technology-sectors/309433

Database Integration in the Grid Infrastructure
Emmanuel Udoh (2009). *Database Technologies: Concepts, Methodologies, Tools, and Applications (pp. 1928-1935).*
www.irma-international.org/chapter/database-integration-grid-infrastructure/8012

Artificial Intelligence and Machine Learning for Job Automation: A Review and Integration
Gang Pengand Rahul Bhaskar (2023). *Journal of Database Management (pp. 1-12).*
www.irma-international.org/article/artificial-intelligence-and-machine-learning-for-job-automation/318455

Enabling Resource Access Visibility for Automated Enterprise Services
Kaushik Duttaand Debra VanderMeer (2014). *Journal of Database Management (pp. 1-28).*
www.irma-international.org/article/enabling-resource-access-visibility-for-automated-enterprise-services/117742