Applications Driven Information Systems:
Beyond Networks toward Business Ecosystems

Kayvan Miri Lavassani, North Carolina Central University, Durham, NC, USA

Bahar Movahedi, North Carolina Central University, Durham, NC, USA

ABSTRACT

Advancements in organizational information systems and developments in business environments have brought important changes to the contemporary management practices and business models. Organizations have evolved beyond their specific and general environments towards business ecosystems. This study investigates the evolutions of organizational information systems and business environments in the contexts of business ecosystem. Based on an evolutionary study of organizational information systems and business ecosystem an ontological model is proposed for adoption of new technologies in the real world designs with particular attention to the application of technology. The authors call for further empirical and conceptual research in understanding and exploring the role of business ecosystems in organizational operations and industrial ecosystems.

KEYWORDS

Application, Business Ecosystem, Information System, Ontology

INTRODUCTION

Organizational information platforms have advanced significantly during the past few decades. These developments have resulted in significant increase in effectiveness and efficiency of executing organizational business processes. Organizational information platforms are tightly coupled with organizational strategy and management of organizational business processes (Sauer and Willcocks, 2002; Chroneer, 2005; Zhang, Xue, Dhaliwal, 2016). Consequently understanding developments in the patterns of organizational information platforms requires a multifaceted investigation of business processes, strategy and environment. This study explores the development of organizational information systems from an organizational business process perspective in the context of business strategy and business ecosystem. We argue that the development of organizational structures and management of business processes has moved beyond the intra-organizational sphere of organizations and that the contemporary businesses cannot fully define their business model –i.e. customer value proposition and profit formula– within the context of their traditional business environment. The traditional view that separates organizational environment into two spheres of "specific environment" and "general environment" (c.f. Jauch and Osborn, 1981) may be useful for identifying key stakeholders and the relations among them; however for the purpose of profit formulation and strategic planning we argue that organizational environment should be viewed within the context of business ecosystems. After discussing the organizational developments in this domain, the study focuses on the evolution of adequate organizational business information systems which further supports the business ecosystem view of organizational environment.

The Emergence of Organizational Information Ecosystem: Rational, Natural, Open System

An organization can be defined and analyzed from different perspectives. In his seminal work on organizational studies Scott (2003) explains that the early views of the organizations were mostly concerned with the management of internal elements of the organizations and were analyzing organizations as "closed systems". One example is the early –and widely cited– organizational model proposed by Leavitt (1965). While this model has been widely used in studying the socio-technical aspect of organizations (c.f. Hawryszkiewycz, 2010; Nograsek and Vintar, 2014; Lyytinen and Newman 2014; Spottke, Wulf and Brenner, 2015) it mostly focuses on the "internal elements" of organization (Scott, 2003). The elements of Leavitt's organizational model are: Social structure, goals, participants and technology (Leavitt 1965, as cited in Scott, 2003).

The intra-organizational level of analysis is evident in the early "rational" and "natural" views of the organizations where emphasize has been respectively on identify the "distinctive features of organization" and "behavioral structure of organization" (Scott, 2003). However in contemporary business environments, organizations are highly inter-connected. They affect their environment and are influenced by changes in their environment. Hence Scott (2003) recommends that an open system view of organizations is more helpful for understanding and analyzing organizations. The open system view does not replace or reject previous views but rather emphasizes that a merely closed system view of the organizations is not capable of explaining the contemporary organizational functions. Table 1 summarizes the three major views of organizations based on the discussions presented in Scott (2003).

Bertalanffy (1968) as one of the seminal scholars in development of the General System Theory (GST) defined open system "as a system in exchange of matter with its environment, presenting import and export, building-up and breaking-down of its material components" (Bertalanffy, 1968, p. 141). It is important to note that this open system definition stems from the GST perspective. In the context of organizational studies in an open system, "environments shape, support, and infiltrate organizations" while inter-organizational connections are more critical to organizational survival than intra-organizational connections (Scott, 2003).

Moore (1993) describes the concept of business ecosystem to illustrate the increasing role of environment in the survival and growth of organizations. Moore's (1993) study on the changes in the organizational environments that lead to success and failure of organizations can be best explained within the open system perspective. Creation, suitability and adaptability of the business ecosystem are viewed as some of the main contributors to the survival and growth of organizations. The rapid change in the advancements of technology and innovation during the past few decades has attracted increasing attention to the role of business ecosystems in organizational success and failure. Several stakeholders can be influenced by actualization of open system view. Consider some of the key infrastructure projects in the U.S. during the early 2010s. The news[2] started to circle stating that Chinese companies are going the takeover large construction projects including California Bay Bridge –which was initially considered to be funded as part of the American Recovery and Reinvestment Act

Table 1. Development of organizational views: Natural, rational and open systems

Organizational View	Emphasize	Select Early Pioneers
Rational System	● Distinctive features of organization	Barnard (1938); March and Simon (1958); Blau and Scott (1962); Etzioni (1964)
Natural System	● Behavioral structure[1] of organization	Gouldner (1959); Bendix (1956); Collins (1975)
Open System	● Open and dependent to outside	Bertalanffy (1956); Boulding (1956); Scott (2003)

Adopted from the discussions presented in Scott (2003)

13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/applications-driven-information-systems/165404

Related Content

Cape York Digital Network
Alopi Latukefu (2007). *Information Technology and Indigenous People (pp. 298-301).*
www.irma-international.org/chapter/cape-york-digital-network/23567

Use of UGC-Infonet Digital Library Consortium among Distance Education Faculty Members of Annamalai University
S. Kishore Kumar (2013). *Challenges of Academic Library Management in Developing Countries (pp. 295-301).*
www.irma-international.org/chapter/use-ugc-infonet-digital-library/77988

Improving the Efficiency of an Emergency Department
Vincent Omachonuand Howard Gitlow (2013). *International Journal of Innovation in the Digital Economy (pp. 18-35).*
www.irma-international.org/article/improving-the-efficiency-of-an-emergency-department/100648

Implementation of Electronic Health Record System at a Community Healthcare Organization
Vincent K. Omachonuand Kaytee Shatlock (2012). *International Journal of Innovation in the Digital Economy (pp. 27-39).*
www.irma-international.org/article/implementation-electronic-health-record-system/66371

Conceptualizing a Contextual Measurement for Digital Divide/s: Using an Integrated Narrative
Karine Barzilai-Nahon, Ricardo Gomezand Rucha Ambikar (2010). *Handbook of Research on Overcoming Digital Divides: Constructing an Equitable and Competitive Information Society (pp. 630-644).*
www.irma-international.org/chapter/conceptualizing-contextual-measurement-digital-divide/38341