Chapter 16
Executing a Real-Time Response in an Agile Information System

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ABSTRACT

Agile information systems (AIS) is a current topic of interest in the IS industry. An AIS is defined as one that has ability to sense a change in real time, diagnose it in real time, and select and execute an action in real time. This study focuses on the properties or attributes of an AIS to execute an action in real time. The properties outlined in this research enable an AIS to select a response in real time and then execute a response in real time. The attributes are derived using industry literature, refined using interviews with industry practitioners and then verified for importance using a survey. From the exercise it is concluded that most properties or attributes are important for real-time execution in an AIS. Dimensions underlying these attributes are identified using EFA. Some recent frameworks and paradigms related to IS configurations that can respond to changes in real time are discussed. These frameworks incorporate many of the properties that were arrived for executing a change in real time in an agile IS and hence provide additional validation for the research.

INTRODUCTION

The current business environment and environment in general is characterized by change, uncertainty, and turbulence. The rate of change is fast and unpredictable. There are many sources of change. Changing and evolving technology, change in consumer demographics (e.g. aging in certain societies), change in customer demand, new competitors (in the same product category and serving as substitute products),

etc., are all sources of change that an organization in today's environment has to deal with on a regular basis. The seamless flow of information on a global scale and global competition means that the impact of a change can occur fast and come from any corner of the world, not just locally or even from within the country. Organizations need to be proactive in anticipating change and responding to it in real-time, to stay competitive in the marketplace. Organizations also need to be able to react in real-time to a change that has occurred, again not just to stay competitive but also for survival. Organizations then need to develop the capability to respond to a change in real-time (refer to Pankaj et al., (2009) for a more detailed treatment). This capability may be defined as agility. As per a Computer Associates survey, 84% of the executives believe that the capability to respond more quickly to new opportunities will give them a distinct advantage, 65% believe that improved agility will result in higher customer satisfaction, and 58% believe that it will result in a higher employee productivity and retention (Orton-Jones, 2017).

Agility is a multi-faceted concept which pervades all aspects of an organization (Pankaj, 2009). Information is an integral part of any organization's operations, functions, and processes (Tushman & Nadler, 1978), and Information Systems (IS) are a necessity for any modern organization where information processing is concerned (Pankaj & Hyde, 2003). Additionally, IS are needed for organizational agility on account of their ability to provide shared, distributed and integrated, current, and fast-flowing information (Bajgoric, 2000; Bal, Wilding, & Gundry, 1999; Christopher, 2000; Hoek, 2000; Mason-Jones & Towill, 1999; Sharifi & Zhang, 1999; Yusuf, Sarahadi, & Gunasekaran, 1999). Hence information and the information processing mechanisms (IS) in a modern organization are an integral consideration in agility of an organization.

Modern business processes in organizations use IS as a core resource or component (Pankaj & Hyde, 2003). In many and most cases, IS may completely or significantly embed a business process (e.g., Internet banking). The pivotal role of IS in modern organizational business processes means that an organization (agile or striving to be) cannot change its business processes unless the IS changes as well. Thus, an agile organization would need an agile IS. As per the ORACLE cloud agility survey (ORACLE, 2015) the ability of the competitor to launch innovative services more rapidly was identified as a top threat by 27% of the respondents. Also, as per the survey, a majority of businesses believe they are agile but cannot flexibly manage workloads or rapidly develop, test, and launch new applications, leaving them poorly prepared to deal with competitive threats. What Boynton indicated in 1993 still holds true: current IS are not easy to change though several are getting closer in some aspects. Markets change but IS do not. Though more organizations are experimenting with Agile Development methods, most IS have been developed and are still being built, to cover a closed/defined set of requirements using the waterfall development methodology, especially in contracting and outsourcing arrangements. The performance of an IS is also optimized for these requirements. The result of this optimization is that IS changes are often arduous and complicated, especially in cases where the requirements were not explicitly foreseen by the designers. But such requirements are frequent in today's environment. The problems in changing an IS are further aggravated by other factors such as outsourcing, where the knowledge about the architectural and technical aspects of IS may primarily reside outside the organization. The inability of IS to change quickly impedes organizational agility. The challenge for an organization is to structure its IS to meet a variety of changing requirements, many of which are not even known when the IS are built. In summary, an agile organization needs an agile IS.

So, what is an agile IS? We arrive at the definition or construct of an agile IS based on prior work done in this area by the authors. Agility in general is defined (Pankaj, 2005; Pankaj, Hyde, Ramaprasad,

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