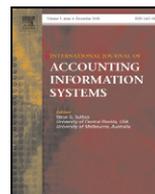




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Event study methodologies in information systems research

Yaniv Konchitchki¹, Daniel E. O'Leary*

University of Southern California, United States

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ABSTRACT

Event studies are based on the theoretical framework of efficient capital markets and the notion that security prices include all information available to the market. As a result, announcements made by firms provide to market participants information that can be impounded into the market price. This paper investigates the use of event studies in information systems and accounting information systems research using a three-pronged approach. First, this paper provides a comprehensive survey of research that uses event study methodologies, where the events are announcements made by firms about issues related to information systems, e.g., announcements of the adoption of enterprise resource planning systems and of the effect of security breaches in firms' information systems. Second, this paper summarizes event study methodologies used in prior research, along with some of the key parameters and concerns associated with their implementation. Third, this paper provides remarks on key event study modeling issues, and it offers recommendations to researchers.

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1. Introduction

Event studies have been a major focus of prior research because they provide a powerful setting to examine the informativeness of an event as assessed by market participants. An event study first requires identifying the event of interest, e.g., disclosure of the purchase of a particular type of software. After the event is defined, the period of time over which the stock price of the firm experiencing the event is determined. Then, the stock price changes beyond the "normal," or expected changes, in response to the event announcement, are examined to determine the extent to which the event changes the market participants' evaluation of the firm.

The notion of efficient capital markets (Fama, 1970) provides a strong theoretical foundation for this basic event study methodology. Fama (1991, p. 383) notes that "security prices fully reflect all available

* Corresponding author. Tel.: +1 213 740 4856.

E-mail addresses: yaniv@marshall.usc.edu (Y. Konchitchki), oleary@usc.edu (D.E. O'Leary).

¹ Tel.: +1 213 740 9399.

information". As new information is made available to the market, e.g., in the form of announcements about a firm's use of information technology, investors are expected to impound this information into the firm's stock price to capture the expected effect of the new information on the firm's value. As a result, the incremental effect of the information announcement on the value of the firm can be observed.

Event studies have been widely used in virtually all business and economics disciplines. Perhaps the first event study was published by Dolley (1933), who investigated the effect of stock splits on stock prices. The modern methodology of event studies was initiated by Ball and Brown (1968) and Fama et al. (1969), but the methodology has continued to evolve over time (MacKinlay, 1997).

MacKinlay (1997), Binder (1998), Kothari and Warner (2006), and others provide analyses of event studies in finance. In addition, Dehning et al. (2003a,b), Roztochi and Weistroffer (2008, 2009a,b), and others provide reviews of different aspects of the use of event studies in information systems. However, this paper focuses on methodological issues as they relate to the use of event studies in information systems. In addition, this paper updates the literature that uses event studies in the information systems research area. Further, this paper evaluates the research questions examined in prior studies, and analyzes the comparative limitations of alternative methodological approaches.

1.1. This paper scope: event studies and stock markets

At their most general level, event studies do not necessarily include or require stock market information. Instead, there could be a relationship between an event and a dependent variable. For example, Felcher et al. (2010) study the relationship between the event of "changing teachers" in a school and students' standardized test results. However, in this paper we assume that the event relates to an enterprise technology and the effect of the event is measured in a stock market response. Relating the effect of an event to a stock market response allows researchers to determine whether the event provides new, incremental information to stock market participants and the extent of the economic impact of the event on firm value.

1.2. Purpose of this paper

The purpose of this paper is to survey the literature on event study methodologies related to information systems, and investigate some of the key concerns with using event studies in information systems. In so doing, we analyze parameters associated with the methodology of over 50 information system event studies. Because the paper is primarily concerned with the methodology used in the event studies, we do not focus on the actual results or conclusions of the specific studies. A comprehensive set of references is provided at the end of the paper for the reader who wishes to further examine these research studies.

This paper proceeds as follows. Section 2 describes how event studies differ in information systems, in contrast to accounting and finance studies. Section 3 investigates the basic event study methodology, laying out six different steps. Section 4 examines the possibility that confounding events can occur during the event window. Section 5 discusses the importance of time-related issues, among these are stationarity and meta events occurring over time. Section 6 investigates the impact of firm size on event studies. Section 7 analyzes the question, "after the event, then what?," focusing on the analysis of future performance to determine whether the stock market is correct in its anticipation of the effect of the event. Section 8 analyzes limitations of an alternative market measure, and it describes why event studies are superior to an alternative approach to investigating the market response of technology adoption. Section 9 provides a summary of our key recommendations regarding event studies. Section 10 investigates the overall impact of information technology (IT) event studies, aggregating the results. Finally, Section 11 summarizes the paper, discusses its contributions, and provides potential extensions.

2. The difference between event studies in information systems and event studies in other settings

Event studies have been used in a wide range of settings, including accounting and finance (e.g., MacKinlay, 1997). As an example, in finance, researchers have used event studies to examine the market effect of mergers and acquisitions. Additional examples in accounting include whether accounting

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