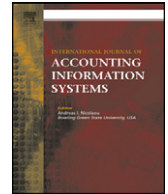




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An exploratory study of the adoption, application and impacts of continuous auditing technologies in small businesses

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ABSTRACT

Continuous auditing technology has been studied in various contexts, but mostly within large enterprises with their own integrated information systems and internal auditing functions. Although several vendors of continuous auditing technologies have reported implementations in small businesses, little is known about the use and impact of this technology in this type of organizations. This exploratory study considers the motivations for adopting a certain type of continuous auditing technology, as well as the applications and impacts of this technology in seven small businesses. The results indicate that the technology is usually implemented to increase resource efficiency, but is frequently perceived as a tool to fix data quality problems – rather than a strategically aligned technology. Implementation is not driven by an internal auditing department but by either an IT or finance department. Application of the technology is first and foremost transaction verification with process control applications emerging later. Main impacts include a change from corrective controls to preventive and detective controls; an increase in the perception of value created by the financial department; and an increase in management trust of data. The study also reveals potential negative impacts of this technology, such as alert immunization and loss of users' critical thinking.

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1. Introduction

Utilizing information technology to ensure the quality of decision-relevant information, as well as ensuring compliance with laws, regulations, and policies, is high on the corporate agenda. In fact, many Chief Executive Officers believe that the correct utilization of information technology is critical to the role of the Chief Financial Officer – and that this role includes transforming the compliance burden into an opportunity (KPMG, 2014). Research shows that continuous auditing is one such technology implemented in an increasing number of organizations to tackle these challenges (Vasarhelyi et al., 2012).

Continuous auditing has been defined both as a process and as a technology (Bumgarner and Vasarhelyi, 2015). This paper focuses on the information technology that enables continuous auditing. Following Gonzalez et al. (2012b), this paper uses the term “continuous auditing technology” for this technology.

The current research is within the domain of Accounting Information Systems research (AIS). Apart from computer auditing, the AIS research agenda includes enterprise systems, knowledge based systems and the business value of IT (Sutton, 2010). In turn, AIS research is part of a broader research agenda in the social and technical sciences, focusing on the adoption, applications and impacts of information technology in organizations and societies (EU, 2012).

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All organizations have control systems. In the AIS and auditing literature these are usually presented either as internal control systems (COSO, 2013) or management control systems (Malmi and Brown, 2008; Chenhall, 2003). Internal control includes safeguarding assets and providing management with reliable information for decision-making so that the organization can reach its objectives (COSO, 2013). Management control is a broader concept and includes, for example, cultural controls, planning controls, cybernetic controls, rewards and compensation practices and administrative controls that are designed and implemented to change and direct management and employee behavior (Malmi and Brown, 2008). Simons (1995) points out that management controls only work if data and information systems are reliable and internal controls are essential to ensure the integrity of other systems. Internal controls are therefore critical for making management controls work (Simons, 1995). The link between information technology and control in general is an under-researched subject and “there are only few generally accepted conclusions about the relationships between IT and management control” (Granlund et al., 2013:275; see also Berry et al., 2009). Although research shows that application of continuous auditing technologies impacts control systems (Alles et al., 2002, 2008; Chan and Vasarhelyi, 2011; Gonzalez et al., 2012a, 2012b) not much is known about the characteristics of these impacts. A primary aim of the current research is to understand and provide evidence on the impact of continuous auditing technologies on internal controls in small businesses.

The vast majority of businesses globally are small businesses.¹ For example, in the top 20 world markets, small businesses make up 85% to 99.9% of the business population (ACCA, 2010). Small businesses also account for approximately 50% of private sector value-added and 77% of private sector employment globally (ACCA, 2010). Research shows that size matters when it comes to adoption of innovations in general (Damanpour, 1996) and information technology innovation in particular (Lee and Xia, 2006). Studies of adoption of information technology innovations in small organizations show that adoption rate and path is moderated by the type of information technology innovation, stage of the adoption and industry sector (Lee and Xia, 2006). Furthermore, management control system research shows that when companies increase in size their control systems increase in complexity. They also become more formalized, more likely to be policy and objective driven, and utilize a more varied mix of result, action, and personnel controls (Chenhall, 2003, 2006; Chenhall and Langfield-Smith, 2003; Davila and Foster, 2007; Malmi and Brown, 2008; Nobre and Zawadzki, 2013). This suggests that the characteristics of small business adoption and application of continuous auditing technologies – as well as the impacts of these technologies – are not necessarily similar to experiences in large enterprises.

Customer references from technology vendors selling continuous auditing technologies such as SAP, Oracle, IDEA, ACL and Expectus indicate that these technologies are purchased by and implemented in many small businesses. Indeed most of the customers of Expectus – the provider of the continuous auditing technology this study covers – are small businesses. Small businesses are generally not traded on any stock markets, have fewer compliance requirements and have less stringent financial reporting requirements than larger companies. Considering these general characteristics, why would small businesses implement continuous auditing technologies? This study considers this question and contributes empirical evidence on the adoption, application and impact of continuous auditing technologies in small businesses.

The current research adopts an exploratory approach, and includes semi-structured interviews with respondents in seven small businesses that have adopted and implemented continuous auditing technologies. The study addresses three specific research questions:

- What motivates small businesses adopt continuous auditing technologies?
- What are the applications of continuous auditing technologies in small businesses?
- What are the impacts of the application of continuous auditing technologies in small businesses?

Additional background for these questions is provided in Section 2.

The study's context is Iceland – a highly developed western economy where almost all of the companies are small businesses with less than 500 employees. This fact makes the Icelandic business environment a good population for studying small businesses. Having recovered from the effects of the financial crisis in 2008, today Iceland is a growth economy based on tourism, heavy industry and fisheries.

The remainder of the paper is structured as follows: the next section contains a review of the relevant literature, followed by sections describing the research methodology; presenting the results; and describing and discussing the themes that emerged from the study. The final section provides the study's conclusion and suggestions for future research.

2. Continuous auditing technologies and small businesses

The operational definition of continuous auditing used in the current study is *the methodologies, processes and technologies that enable real time or close to real time assurance on a specific subject matter*. This is a broader definition than the one originally proposed by ISACA which limited the assurance to written assurances and the target group to independent auditors (CICA/AICPA, 1999).

Since introduced in the early 1990s, continuous auditing has developed into a practice focus in some audit firms, a set of methodologies and tools in many companies and information technology solutions provided by various technology vendors

¹ The definition of small businesses used is from the United States Small Business Administration that refers to small businesses having fewer than 500 employees <https://www.sba.gov/content/small-business-size-standards> (accessed March 25th 2015).

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