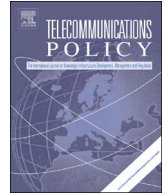




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# Entrepreneurs' use of internet and social media applications

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## ABSTRACT

While it is recognized that the Internet and entrepreneurial opportunity are linked, the majority of studies analyzing business use of the Internet focus on small and medium-sized enterprises (SMEs). To address a need for adoption studies focused on new ventures, which differ from SMEs in terms of organizational stage and number of employees, this study analyzes survey data from entrepreneurs to understand factors that influence the adoption of multiple Internet and social media platforms, and the role of business incubation facilities in providing information technology assistance to these ventures. Regression analysis of survey data reveal that prior entrepreneurial experience was the most important factor in explaining a diverse number of Internet application and social media use. This finding likely stems from differences in cognitive frameworks between novice and experienced entrepreneurs, which impacts their ability to recognize opportunities and respond to technological change. The location of a new venture within a business incubation facility did not help in the diverse use of Internet applications. This result did vary by gender as model results highlighted that women in business incubation facilities were more likely to use a diversity of Internet applications than those not located in these facilities. These findings point to policy implications regarding the implementation of technology training programs for female entrepreneurs, and digital awareness/ training for novice entrepreneurs.

## 1. Introduction

National level broadband and entrepreneurship initiatives such as the National Broadband Plan (FCC, 2010) and the White House's Startup America Initiative (White House, 2013) highlight the importance of technological change and entrepreneurship to national prosperity in the global information economy. While it is recognized that the Internet and entrepreneurial opportunity are linked because of the general purpose technology (GPT) nature of the Internet, (Bresnahan & Trajtenberg, 1995), the majority of studies analyzing businesses and the Internet focus on small and medium-sized enterprises (SMEs) (Dholakia & Kshetri, 2004; Sadowski, Maitland, & van Dongen, 2002; Williams, 1999; Parker and Castleman, 2007).

Although prior work has acknowledged that firm age impacts the adoption of ICTs (Dholakia & Kshetri, 2004), new research is needed that separates new ventures from established small and medium sized ventures, which are distinct in three ways. One, SMEs are more likely to have been in operation for several years than are ventures that have not yet survived the critical three-year mark otherwise known as the valley of death (Gompers & Lerner, 2002; Zwilling, 2013). Two, SMEs are more likely to have several employees than are newer ventures who are more likely to be managed and operated by one person or a small team of people. The Small Business Administration (SBA) for example defines small businesses as having between 100 and 500 employees, depending on

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the sector (SBA, 2016). Three, prior work has highlighted differences in communication and planning, decision-making, and rewards systems at different stages of the organization life cycle (Smith, Mitchell, & Summer, 1985). Thus, it is necessary to distinguish between new ventures, which are at the inception stage of the organizational life cycle, from established businesses at the high-growth or mature portion of their life cycle.

Given the need for research on newer ventures, this study will analyze the adoption of Internet applications by new ventures, and the role of business incubation facilities in providing information technology assistance to these ventures. In this study, new ventures are defined as ventures less than three years old with few, if any employees. Business incubation facilities are defined as facilities (physical or virtual) that provide physical space, business services, and/or mentoring for new ventures. In the analysis of Internet application adoption by new ventures, three research questions will be answered. First, to what extent are there differences in Internet application adoption in newer compared to older ventures? Two, what are the characteristics of new ventures and the entrepreneurs that adopt a variety of Internet applications? Third, what is the role of business incubation facilities in encouraging the adoption of multiple Internet applications?

Aside from providing much needed differentiation between new and established ventures, analytical results of this study provide two additional contributions to the body of work on SMEs and the adoption of Internet applications. First, this study addresses the need for evaluations of the adoption of multiple applications since prior studies tend to concentrate on one particular type of application (Parker & Castleman, 2007). Two, it evaluates the role of business incubation facilities in promoting application adoption, which is important since prior work has found that formal government policies are not as effective at enhancing adoption as are informal interactions with suppliers and consulting firms (Beckinsale, Levy, and Powell, 2006).

## 2. Owner-manager characteristics and information and communication technology (ICT) adoption

When evaluating the adoption of Internet-based technologies by small and medium sized enterprises (SMEs), it is important to analyze the characteristics of the owner-manager (Chua, Deans, & Parker, 2009) given the moderating effect of managers on the innovativeness and technology adoption of organizations (Damanpour & Schneider, 2009). Relevant characteristics of owner-managers to consider include: age, education level, attitudes towards technologies, and organizational goals (Chua et al., 2009).

In an organizational context, older managers are believed to have been socialized into existing organizational routines, which makes them less psychologically prone to change (Damanpour & Schneider, 2009). This organizational embeddedness appears to extend to more recent Internet innovations in social media. Studies have found that younger managers are more inclined to adopt social media than are older managers (Wamba & Carter, 2014). In addition to age, higher levels of education are believed to enhance the receptiveness of people to ideas (Damanpour & Schneider, 2006) and the ability to acquire information and reduce uncertainty (Damanpour & Schneider, 2009). It is also believed that educated managers are more capable of promoting an innovative atmosphere (Wamba & Carter, 2014) and are better at problem solving and decision making (Damanpour & Schneider, 2009).

In addition to managerial age, education level, and attitudes towards technology, other managerial characteristics such as gender and race may play a role, albeit less straightforward, in ICT adoption by firms. Men have been noted to use the Internet more intensively and to seek out different types of information on the web than women (Dholakia, 2006). Men are also more likely to contribute web content than are women (Hargittai & Walejko, 2008). Studies have also found gender-based differences in concerns about firm adoption of e-commerce. Macgregor and Vrazalic (2006) found for example that men were more concerned with the difficulties associated with e-commerce implementation while women were more concerned about the suitability of e-commerce for their businesses.

More recent studies of gender and social media find no gender differences in social media adoption (Anderson, 2015; Wamba & Carter, 2014) but rather differences in the type of social media outlets used by men and women. Anderson (2015) highlights that men are more likely to use online forums such as Reddit while women are more likely to use outlets such as Facebook, Pinterest, and Instagram (Anderson, 2015). Social media studies have also found variations in outlet choice by race and ethnicity (Krogstad, 2015). As with gender, this might influence the types of media adopted by an organization via the influence of the owner-manager or the customer orientation of the firm. Recent studies specific to entrepreneurs and ICT use have also found that Hispanic entrepreneurs are less likely to use ICTs in their business processes and for long-term strategic analysis than entrepreneurs of other ethnicities, even after federal level efforts to encourage ICT use to raise productivity and enhance profitability (Middleton & Byus, 2011).

## 3. SMEs and ICT adoption

In addition to owner-manager characteristics, a range of both internal and external factors to the firm impact the adoption of ICTs by SMEs (Lefebvre & Lefebvre, 1996). Firm size and age are examples of internal firm factors (Dholakia & Kshetri, 2004) as are the perceived benefits of a particular technology (Beckinsale et al., 2006; Grandon & Pearson, 2004; Mehrtens, Cragg, & Mills, 2001; Michaelidou, Siamagka, & Christodoulides, 2011). Irrespective of the potential benefit for a firm, if the perception of the benefit is not there, then adoption will not take place. Therefore, owners need to understand the technology and the benefits associated with adopting the technology before making investment decisions (Lee & Runge, 2001). Notable external factors impacting SME adoption include industry characteristics and trends, as well as macroeconomic trends (Dholakia & Kshetri, 2004).

Once the decision to adopt has been made, firms pass through a series of stages in the process of implementing ICTs (Kwon and Zmud, 1987; Daniels, Wilson, & Myers, 2002; Dholakia & Kshetri, 2004; Durkin, McGowan, & McKeown, 2013). While the number of stages varies across studies, the types of activities at each stage may be characterized generally as the initial decision to

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