



'Risky business': Perceptions of e-business risk by UK small and medium sized enterprises (SMEs)



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ABSTRACT

This paper explores the risk perceptions of key stakeholders in SMEs when making decisions on technology investments. Current literature focuses on the nature of the technology from a technical perspective and its associated benefits to the SME. We seek to make a contribution that builds on the small but growing work, which views investment technology decisions as the outcome of a process of both objective and subjective risk assessment. Evidence presented in this paper suggests that subjective elements play an important part in assessing technology risks. Our empirical findings are that both e-business experience and the role of the decision-maker within the firm influences risk perception, whereas, sector differences are more modest. One implication of our findings is that policy interventions should be more sensitive and targeted at different types of stakeholders – owners, IT professionals and other individuals rather than on the sector in which the SME operates.

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1. Introduction

What to invest in, and how much to invest, are critical decisions for any enterprise. However, the consequences of making incorrect decision for an owner of a small and medium sized enterprise (SME) during a recession, are potentially terminal.¹ Investments in technology are particularly crucial for the SME owner, partly because of their scale and duration but also because of their potentially large impact on firm competitiveness. Johnston, Wade, and McClean (2007), when investigating SMEs adopting Internet Business Solutions across five OECD nations from Europe and North America, concluded that e-business adoption resulted in tangible financial benefits for SMEs in customer development and e-marketing. Continuing in this vein, Peña, Jamilena, and Molina (2011) found that technology had a positive impact on marketing orientation. It would therefore appear that such competitiveness can help the SME to outperform larger firms (Chong & Pervan, 2007) and raises the promise and potential of e-business.

Prior work on the application and value that technological investment and innovation can bring to SMEs has tended to focus on what the technology is, or what it can do for the firm (see Haddara & Zach, 2011; Levy and Powell, 2005, 2006; Pob-Nzaou & Raymond, 2011). Allied to this, research has been undertaken on technology adoption (see Parker & Castleman, 2009; Simmons, Armstrong, & Durkin, 2008).

This paper follows the recommendation of Johnston et al. (2007), to adopt new theoretical direction to make sense of decision-making processes within SMEs. This was partially addressed by Pezderka and Sinkovics (2011) when investigating e-risk for small firms active in online internationalization, however, this work focused on the risk itself and neglected to consider perceptions surrounding the risk(s).

Our approach to understand e-business investment decisions in SMEs emphasises that they are a blend of both objective and subjective assessments of risk. Our initial position is that factors influencing SME owners will differ from those influencing their larger counterparts, because SMEs generally cannot influence market prices (Storey and Sykes, 1986) and they also have less perfect information on which to make decisions. With this in mind, our paper examines whether the number of years of using e-business technologies; the IT experience and knowledge of the respondent (based on their role within the SME) and the industry type influence perceptions of risk when making e-business related decisions. Exploring the 'softer' side of technology investments challenges the

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¹ Frankish et al. (2010) shows that 50% of new firms do not survive for 3 years and that closure rates peak in the period between 18 and 24 months at an annual rate of virtually 20%.

over reliance on more quantifiable, mathematical and analytical approaches and helps balance the quintessential quantifiable ways of examining in a more systemic way. This does not claim that quantifiable techniques are unimportant but rather to highlight they are not the all-important element.

The paper is structured as follows: the first section discusses SME investments in technology. This is followed by a discussion of the concept of psychometric risk, which introduces the subjective view of risk and its merits. This subjective approach is used to generate three hypotheses. Following an outline of the testing strategy and the characteristics of the sample firms, results are presented. Then the limitations of the research, suggested further research directions, and implications for both policy and practice are discussed.

2. Research setting: SMEs and investments in technology

Decisions on the choices and the implementation of technology in SMEs are likely to differ from those in larger firms. Typically, smaller firms have a flatter organisational structure (Levy and Powell, 2005) mainly centralised upon the owner(s) and manager(s) (possibly the same individual(s)) who may carry out multiple roles. Professional competencies relating to technology found in larger firms may be unavailable to SMEs. Although SMEs may be more organic, flexible and agile, the downside is that key business decisions may be overly reactive and shorter-term, compared to larger firms. Owner managers of SMEs may also be less aware of the operational and strategic benefits of technology than their larger firm counterparts (Levy, Powell, & Worrall, 2005; Love, Irani, Standing, Lin, & Burn, 2005; Malhotra & Temponi, 2010).

According to Johnston (2008), many smaller firms lack formal mechanisms to undertake an intensive evaluation of investment decisions. The absence of systems and processes is particularly problematic when attempting to lever technological advantage and to measure the value of IT bearing in mind financial risk (Levy and Powell, 2005). From the SMEs' perspective, this lack of 'formality' has the benefit of dispensing with the need for dense documentation (Tidd, Bessant, & Pavitt, 1997), but whether this leads to 'better' decisions is questionable. However, it is clearly evident that all mechanisms (formal and informal) for evaluating investments are influenced by the psychological and behavioural characteristics of the SME owners/managers and the environment in which they operate (Kuemmerle, 2002).

Beckinsale, Levy, & Powell (2006), Harindranath, Dyerson, & Barnes (2008), Levy and Powell (2005) and have identified a series of drivers for SMEs adopting e-business technologies. These include:

- A more 'just in time' operating based business model;
- Enhanced market intelligence;
- Greater perceived value via relationship management;
- Managing market share;
- Prioritising a platform for product, service and paradigm based innovation;
- Reducing operating costs.

However, these drivers tend to adopt a positive view of technology and implicitly suggest that SMEs can, and do, benefit from technology investments. We now make the case for a wider understanding of the risks faced by SMEs when considering investing in such technologies.

3. Theory and hypotheses

The concept of risk has been debated over the years. A common view is that risk is the potential that a chosen action (or inaction)

or activity (or inactivity) will lead to an undesirable outcome (ISO 3100:2009). In short, risk is often seen as a probability of occurrence. As such, perception of risk plays a part in how risk is viewed and in turn how this influences decision-making. The concept of risk implies that how ones perceives risk, perhaps due to cultural, educational and experiential knowledge may influence how the outcome of risk of something such as investments in technology is viewed.

3.1. Psychometric risk

The psychometric approach to risk is based on a "theoretical framework that assumes that risk is subjectively defined by individuals who may be influenced by a wide array of psychological, social, institutional and cultural factors" (Slovic, 1992, p. 120). A major assumption is that risk is inherently subjective and interconnected with the psychological and cultural factors that influence a given individual. The psychometric approach has been endeavouring to incorporate both qualitative and quantitative techniques methods of data analysis (Rohrmann, 1999).

The psychometric method has been used to explain, and make sense of, risk perception of social entities² (see Table 1). Rohrmann and Chen (1999) have extended not only how we classify the psychometric paradigm, but also the methodological approach needed to undertake such studies.

In more qualitative-based approaches (Earle & Lindell, 1984; MacGregor, 1991), subjects describe in their own words scenarios they perceive to be 'risky'. The scenarios are usually associated with situations, behaviours, or environmental conditions. Respondents are asked to describe their risk perception in unfavourable situations. The risk analysis focuses on understanding the different constructs that contribute to risk perception and how subjects make judgements during times of uncertainty. The data used to explain the subjective understanding of risk usually uses 'softer' analytical techniques such as the repertory grid procedure. In quantitative based-approaches, (Borcherding, Rohrmann, & Eppel, 1986; Johnson & Tversky, 1984; Slovic, Fischhoff, & Lichtenstein, 1980; Slovic, 1992; Vlek & Stallen, 1981; Winterfeld, John, & Borcherding, 1981) judgements about risk sources are measured on numeric scales and are then analysed by multivariate statistical procedures. The analysis rates the risk sources on a pre-defined scale or judges them according to their mutual similarity or dissimilarity. Factor and cluster analyses and multivariate statistical techniques are normally utilised to identify risk perception and to locate risks in a subjective conceptual space. A synthesis of studies adopting this psychometric approach is given below:

There are many studies evaluating psychometric risk perception in social entities but examinations of the influence of socio-demographic factors are less common (Rohrmann & Chen, 1999). However, such factors are important since they incorporate broader values, cultural and political issues relating to which technology becomes embedded in the wider society (Rohrmann, 1999). These factors are relevant for SMEs making technology decisions vital to the enterprise.

3.2. Technological risk perception

Business and management research on technology decisions normally takes a technical/objective view of risk, particularly surrounding Enterprise Resource Planning, (ERP) and Customer Relationship Management (CRM) and IT Security (see Furnell,

² See Rohrmann (1999) and Sjoeborg, Moen, and Rundmo (2004) for an extensive review of studies that have utilised the psychometric paradigm to explore risk perception.

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