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SMEs and IT Innovation. What's the Way Forward?

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Abstract

Research on Small and Medium Size Enterprises (SMEs) has attracted considerable attention within the information systems community as it has been realised that small companies are significantly different than their larger counterparts. As innovation in the form of IT plays an important factor in the competitiveness of firms, SMEs and IT innovation adoption is an interesting and intriguing subject. In this position paper we try to review existing literature of innovation diffusion and adoption in order to assess its applicability in the context of SMEs. Our results show that existing innovation diffusion models need to be further developed in order to capture the particularities of IT adoption by small companies. We conclude by offering suggestions for directions that IT innovation studies can take in the context of SMEs.

1. Introduction

Organisational knowledge creation is a key process towards which companies need to develop in order to innovate. There is a common view that Small and medium size enterprises lack the skills and recourses to create new knowledge and innovate within their markets. Their role has been identified as one of imitators or laggards when it comes to the adoption of innovative technologies. Furthermore software production companies tend to develop systems targeted to larger firms while they have to amend and reconfigure their systems when need to be used by SMEs. Thus, it is not surprising that innovation uptake for information systems is lower in smaller firms than in larger firms, while reports from various OECD counties confirm that there is a correlation between the rate of adoption of the Internet and related technologies and firm size. The phenomenon has raised the interest of policy makers world-wide as they have realised that SMEs are in need for support and encouragement in order to invest on new technologies. Small and medium size enterprises (SMEs) represent a
significant part of the world economy. In the European Union, for example, there are 18 million SMEs. They employ 66% of the workforce and are responsible for 55% of turnover. Studies have shown that the wide acceptance and early adoption of IS by SMEs has been slowed down by several country-specific barriers as well as resistance to change, lack of education/awareness about the potentials of IS/ICTs, lack of flexible software, shortage of skilled labour, lack of government assistance, inadequate technical training of employees and limited access to knowledge created by research institutions. Nevertheless and besides the barriers there is a number of SMEs, which have managed to overcome initial problems and come up with interesting, innovative and workable solutions for their business or industry sectors frequently acting as early adopters of technology.

Theories that have been used to explain phenomena of innovation diffusion and adoption are frequently reported as diffusion of innovation theories and they seek to understand reasons behind innovation adoption and strategies for more effective diffusion processes. In this paper we aim to examine the applicability of these theories to studies of IT adoption by SMEs. We conclude that there is a need for enhancing these theories to move from the typical examination of ease of use and technical compatibility factors to more practical issues such as pricing, convenience and quality of service. The paper is structured as follows. In the next section we review the diffusion of innovation literature and we identify shortcomings in existing theories. In section 3 we examine innovation in the context of SMEs and we present particularities involved in the application of diffusion theories in this context. In section 4 we offer some recommendations for future research in the area and we conclude with section 5.

2. Diffusion of Innovations

Diffusion of innovation theories can be viewed from a number of perspectives. Borrowing from organisational studies (Baskerville and Pries-Heje, 2001) suggest genealogical and ecological views. Genealogical views, centralise consensus and regulation in the diffusion setting, and ecological views, conflict and competition. (Damsgaard and Lyytinen, 1997) have also used this distinction, but convey the genealogical as concerned with the micro and ecological with the meso/macro environment. The first is argued to facilitate the understanding of diffusion patterns amongst similar organisations and populations, whilst the second focuses upon how extra-organisational power dependencies shape the diffusion process. Innovation diffusion research has also been characterised as rational and interpretive (Beynon-Davis and Williams, 2003). One of the most widely used rational theories, is Rogers’ diffusion of innovations theory of (Rogers, 1995; 2003). Models such as this, aim to trace and explain the path of an innovation’s acceptance through a given social system, over time. Although, it is acknowledged that social influences may impede or facilitate the process, the emphasis tends to play on the innovation itself. Thus, Rogers’ theory has been criticised for not taking into account the particularities of complex information technologies (Lyytinen and Damsgaard, 2001). For example, the theory has been judged as poorly equipped to facilitate the understanding of how different groups interact in the production and provision of an innovation as well as lacking attention to acts of reinvention and the consequences of innovation adoption (Kautz and Pries-Heje, 1996; Allen, 2000; Elliot and Loebbecke, 2000). In contrast, interpretive approaches, such as those concerned with the social construction of
technology (Bijker and Law, 1994), emphasise the way that technologies are ‘configured’ throughout the process of diffusion by various actors, or relevant social groups, such as professional associations. A further, less well reported perspective of innovation is that of critical theorists. (Suchman and Bishop, 2000) argue that although innovation is often associated with ‘the new’ it is possible that some innovators actually wish to reinforce existing power structures. Thus, in this context, those resisting the innovation could be viewed as the ‘real’ innovators as it is they who desire something different.

The innovation diffusion theory as presented by diffusion theorists implies that businesses would decide to adopt an innovation mainly because of its characteristics. For example Cooper and Zmud (1990) suggest a model that postulates how elements that affect adoption are compatibility which has positive effect on adoption while complexity has negative effects. This implies that other influences such as nature and size of business, background of business owners are disregarded. Additionally, different views, opinions and agendas of various groups involved in the process of the adoption of an innovation are not adequately represented in the theory of diffusion of innovation (Papazafeiropoulou et al., 2005). In this paper we agree that other influences matter and there is a need to study particular contexts of businesses where some factors are important than other and see SMEs as a particular case of business where issues of price and awareness about the benefits of new technologies are of considerable importance.

3. IT Innovation and SMEs

Innovation has been recognized as an important factor towards the economic advance and competitiveness at company as well as national level. Innovation assists companies to improve the way they contact their business, their relationships with their customers and their profile in their industry sector. It has been suggested that companies that invest on innovative practices and technologies can sustain a higher performance and grow faster than non-innovators (Stokes and Wilson, 2006). Small and large firms appear to have different roles to play in the innovation process (Acs and Audretsch, 1990). Small companies are frequently presented as followers when it comes to innovation as they have frequently have to imitate practices adopted in large organizations. Nevertheless there are cases where smaller companies can use their size and flexibility to their advantage and contribute to innovation production and use more than larger firms (Audretsch, 1995). In practice there are both pros and cons when it comes to the involvement of small and large business to innovation activities. In particular, small companies follow flexible and ad-hoc behavioural patterns based on the capabilities and innovativeness of their owners-managers who are frequently on the search for new ideas and practices. This flexibility is nevertheless counterbalanced by their lack of financial or technical resources and qualified personnel. Larger companies normally have greater resource base and are in a position to employ staff which has the necessary expertise and knowledge to explore innovation possibilities.

When it comes to IT innovation it is evident that the majority of current technologies, tools, and approaches to implement information systems are aimed to satisfy the needs of large organisations. There is little indication whether the same approaches and principles can be successfully applied to SMEs. Additionally, despite the fact IT
adoption has been of particular interest amongst researchers and practitioners, only recently there has been a shift of interest to IT adoption by Small and Medium Enterprises (SMEs). Although studies on IT adoption of technologies such as the Internet and e-commerce by SMEs have started to emerge, these are still limited as they mostly report on lack of full adoption by SMEs (Lawson et. al, 2003). This suggests that the exploitation of IT opportunities by SME’s has not been well documented and understood.

This lack of understanding of SMEs needs when it comes to IT innovation adoption is apparent from the difficulties policy makers have in applying successful government policies related to IT adoption by SMEs. Software providers, the governments and other interest groups have continually stressed the importance of IT adoption by small companies but with little results where SMEs are concerned. There are many factors that could influence SMEs in deciding whether or not they would adopt a new technology. Looking at the main innovation attributes of IT reported at the innovation diffusion literature and presented in section 2 we can see how SMEs view these attributes and additionally see which other elements not looked at in the diffusion studies are important for them.

For example relative advantage seems to be an attribute which is important for SMEs seeking to improve their working conditions and competitiveness through the use of IT. Nevertheless the issues of compatibility and complexity (Cooper and Zmud 1990) does not seem to be a major impediment for companies as the use of technology has been common practice for employees in different levels of expertise.

What has been realised is that a number of other issues not frequently reported in the diffusion of innovations literature seem to hold particular importance for SMEs. Awareness is an umbrella issue which entails a number of problems SMEs face when investing on IT innovations. For example training is an issue constantly raised by policy makers as a way towards making SMEs ready to invest on technology by acquiring the necessary knowledge to do so. Evidence for a previous study (Oni and Papazafeiropoulou, 2007) on SMEs adoption on innovative technologies such as broadband show that in the case of broadband adoption and diffusion it seems that there is no consensus as to how the technology is useful, cheap or convenient for SMEs to use. There are a number of assumptions taken by the vendors and the government about broadband adoption that seem to not be shared by SMEs. This seems to be mainly due to a lack of awareness from the SMEs about the benefits of broadband and its opportunities for e-business. Our research showed that was one issue that needs to be further analysed.

Furthermore, the cost of obtaining broadband Internet was a recurring issue in the study’s findings. Thus, the cost of obtaining IT solutions would also require further investigation which is actively related to awareness issues as if SMEs were shown how broadband could save them money. Funding is frequently available for SMEs but seem to be unaware of any such initiatives. Lack of awareness had also made SMEs not able to make full use of the technology as they were limiting their use of the Internet to simple browsing and e-mail exchange. Application such as e-business, efficient data back-up, video conferencing and Voice over Internet Protocol (VoIP) were out of their scope of knowledge and use.
Finally quality of service seems to be a problematic issue for SMEs as the IT products offered to them are frequently not to the highest standards. It is not uncommon for SMEs to have experienced poor quality of service from their providers. Such experiences would possibly deter other SMEs who would have otherwise decided to adopt broadband.

4. The future of research in SMEs and IT innovation

The analysis in the previous sections showed that the problems of IT use by SME and medium size enterprise are not related with specific technological characteristics such as ease of use and compatibility but are mostly related with lack of awareness, cost and quality of service. Existing studies are focused on the use of diffusion of innovation theories that tent to over-emphasise the technology features so missing the opportunity to identify and report on the real problems involved in IT use by SMEs. The track which this paper is presented is aspire to motivate research in this area in order to offer some useful recommendations to stakeholders involved in supply as well as the demand side of IT diffusion. The themes that were suggested in this mini-track are in line with our recommendations for investigating innovative ideas on SMEs and technology as they are listed below:

- Innovation in SMEs
- Case studies of success/failure in the adoption of innovative IS in SMEs
- Decision process and IS evaluation for innovation within SMEs
- Similarities and differences of IS adoption by SMEs and their larger counterparts
- Relationships of power between smaller and larger firms within industry sectors
- IS/ICTs personnel recruitment processes within SMEs
- IS Development vs outsourcing within SMEs
- SMEs and the adoption of e-commerce/enterprise systems (ERPs and CRMs)/ open source software
- SMEs and adoption of broadband & wireless technologies
- Policy issues related to IS diffusion to SMEs

We believe that the increasing interest of the IS community on SMEs and their particularities will continue as it seems that there is a growing need from the SME community as well as policy developers to understand their small companies’ real needs and move towards their solutions.

5. Conclusions

We have looked at innovation and its relation to SMEs with the view to realise the shortcoming of existing diffusion theories and look forward to the future of studies in SMEs and IT innovation. Considering the usefulness and inherent limitations of the diffusion of innovations theories we presented the results of a previous study on SMEs and broadband adoption and we realised that the technological characteristics
of the innovation are not as important as diffusion of innovation theories might suggest. Issues that seemed to be of particular importance are awareness, cost and quality of service. As these specific attributes might be closely related to the specific technology we believe that there is a need to develop new theoretical models towards the study of IT innovation within SMEs that will consider issues beyond typical technological characteristics of the innovation. In particular the study of lack of awareness about the usefulness of available technologies by SMEs is a subject that would continue to attract research attention as seems to be an umbrella issue for lots of the difficulties SMEs face when it comes to investment on IT. We believe this kind of research efforts could be useful for SMEs considering adoption of new technologies such as well as policy makers that seek to apply effective technological adoption policies as well as researchers in the field of innovation diffusion. Finally, researchers interested in this area could consider research questions and studies based on our recommendation for future studies.

6. References


