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## RESEARCH REVIEW

### SMEs engagement with e-commerce, e-business and e-marketing

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This is the second of a series of reviews for *Small Enterprise Research* that cover recently published research in the field of small business management and entrepreneurship. The focus of this review is on the impact of digital technology on small to medium enterprises (SMEs), in particular e-commerce, e-marketing and e-business implementation and strategy. A total of 16 papers published in 2013–2014 are reviewed summarising their methodology, findings and implications for research, education, policy and practice. The papers are discussed in four sub-categories. The first are those that deal with the importance of digital technology to the performance of SMEs. The second are those that focus on SMEs engagement with e-commerce and the third and fourth deal with SMEs engagement with e-business and e-marketing.

**Keywords:** digital technology; e-marketing; e-business; e-commerce; small business; SMEs

#### Introduction

Digital technology, specifically information and communications technologies (ICT), and their application to e-commerce, e-business and e-marketing have had a significant impact on business at a global level (Iansiti & Lakhani, 2014). For small to medium enterprises (SMEs)<sup>1</sup> the spread of digital technologies is a significant opportunity and also a potentially serious threat. The opportunity comes from the ability of SMEs to access digital technologies that were previously only available to large companies and to use these to compete in international markets (Mele, 2013). Yet the threat emerges from SMEs losing business by not embracing the opportunities and becoming uncompetitive in increasingly digital and online markets.

In this article, the second of a series of reviews for *Small Enterprise Research* the findings from 16 papers relating to the impact of digital technology on SMEs is examined and discussed. Only papers published within the period 2013–2015 were reviewed. These were identified using a search of major online academic bibliographic databases including *Google Scholar* and the extensive collection of journals provided by the University of Western Australia Library. In searching for articles published between January 2013 and January 2015 attention was given to works from peer reviewed journals that addressed the engagement with and impact on SMEs of e-commerce, e-business, e-marketing and associated use of ICT and related digital technologies.

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### The importance of digital technology to SME performance

We start this review by examining three papers addressing the relationship between the adoption by SMEs of ICT and other digital technologies and the performance of these firms. The first paper by is by Cataldo and McQueen (2014) published in *Industrial Engineering*. This paper challenges the thesis proposed by Carr (2003) who argued that the adoption of ICT by firms was no longer sufficient to provide a source of competitive advantage because these technologies were now essentially a commodity. The authors draw on two SME case studies from Chile, a dental clinic *ClinicaE* and a driver training and certification company *ServiceX*, to support their argument. They use these cases to suggest that where the adoption and use of ICT in an industry is low, the SMEs that embrace such technology can secure a competitive edge. However, where the industry is already well established in relation to ICT adoption and use, Carr's thesis probably holds and any further investment in digital technology is unlikely to yield a competitive advantage. The paper is largely descriptive in nature and is focused on applied management outcomes. It concludes with a clear set of recommendations for owner-managers of SMEs. These highlight the need for owner-managers to assess whether their industry is or is not making intensive use of digital technology. If digital technology adoption in the industry is high the owner-manager is best to follow Carr's suggestion and not over invest in ICT systems. However, if the industry is lagging in the adoption of digital technologies the owner-manager is recommended to identify opportunities for using ICT systems to engage in e-commerce, e-business and/or e-marketing. They should also seek outside support with implementation and foster a culture and capacity within their business to engage with digital technology.

The second paper, by Colombo, Croce and Grilli (2013) was published in *Information Economics and Policy*. Its focus is on the impact of ICTs, in particular broadband internet technologies, on the productivity and performance of SMEs. A sample of 799 Italian SMEs was drawn for the study, the majority manufacturers. ICT usage was classified into 'basic' and 'advanced'. Basic use was for such things as email, online banking and website searching. More advanced uses were the operation of virtual private networks (VPN), voice over internet protocol (VoIP), video conferencing, e-learning, customer relationship management (CRM), supply chain management (SCM), data security and file sharing. Strategic and organisational change within the firms was measured using a series of items relating to internal and external strategic changes and changes within the firm. The first of these included things like entry into new markets, technological innovation in products or processes, mergers or acquisitions, establishment of offshore subsidiaries. The second were related to changes to employees, investment in training, changes to employee compensation and remuneration schemes, devolution of management authority and collaboration with suppliers or customers. The study's two hypotheses were tested with a two-step generalised method of moments estimator (GMM-SYS), and econometric method for estimating parameters in statistical models (Hall, 2005). The findings suggest that the adoption of advanced broadband ICT applications by SMEs can have a significant and positive impact on productivity. However, this is only the case where such technologies are of specific relevance to the industry in which the SME is operating, and that their adoption is combined with major organisational or strategic changes. For services firms the influencing factor is organisational changes, while for manufacturers it is strategic changes. The authors suggest that for manufacturing firms the gains in productivity they found were potentially influenced by customers and/or suppliers who often required these SMEs to adopt the technology as part of supply chain and customer management processes. By contrast the productivity enhancements found in service firms were most likely due to the reorganisation of the business to improve work force flexibility and skills. In summary the paper offers some interesting findings suggesting that the simple adoption of 'basic' digital technologies may be insufficient to generate any significant productivity gains. However, if the SME

is able to implement these technologies concurrently with strategic marketing, operations, supply chain or human resource management programs they can potentially enjoy significant productivity enhancements.

The third paper by Alonso-Almeida and Llach (2013) was published in *The Service Industries Journal*. It examines the impact of ICT adoption on the human resources (HR) and organisational performance of SMEs. This study took place in Madrid, Spain where the employees of 405 retail travel agencies employing less than 50 people were surveyed. A relationship was found between the size of the firm and the level of ICT adoption and use. Micro-businesses (i.e. those with less than 10 employees) were significantly less likely than their small business counterparts (i.e. those with 10 to 49 employees) to make intensive use of ICT. The data analysis involved the testing of a structural equation model (SEM) using a maximum likelihood method in the EQS statistical software. All four of the study's four hypotheses were supported suggesting that the adoption and use of ICT will influence changes to HR management and then organisational performance in relation to market and customer development. The study indicates that adoption and use of ICT may enhance the competitiveness of an SME due to the firm's ability to develop both HR and organisational performance. ICT allows employees to deal with customers more efficiently and to deliver better service. These technologies also enhance employees' abilities to manage internal and external coordination. However, this only happens when the employees are appropriately trained to make best use of the ICT systems.

### SMEs and e-commerce

Three papers addressed the engagement of SMEs in e-commerce. The term 'e-commerce' is often used interchangeably with the term 'e-business'. However, the term e-commerce generally refers to the use of ICT to undertake transactions such as business to business (B2B) and business to consumer (B2C); in essence selling goods and services via the internet (Daniel, Wilson & Myers, 2002).

The first paper by Astuti and Nasution (2014) was published in the *Gadjah Mada International Journal of Business* and explored the technology readiness of 190 SME owner-managers from a variety of industry sectors in the city of Bandung in Indonesia. Parasuraman's (2000) Technology Readiness Index (TRI) was used to assess the respondents' readiness to adopt e-commerce systems. Responses to the TRI were examined against demographic variables such as age, gender and education. Confirmatory factor analysis (CFA) using LISREL statistical software of the 36 item TRI identified four factors that measured optimism, innovativeness, discomfort and insecurity in relation to the adoption of new technology. The results found men were more likely to be interested in technology than women. Significant differences were also found in relation to people of different ages, with younger owners more likely to display a readiness to adopt technology. In general the owner-managers who were better educated (i.e. had completed university degrees) were more likely to have a high TRI score. Those with higher incomes were also more likely to be optimistic, but also more inclined towards discomfort and insecurity of technology adoption. The authors conclude that government policy should be directed towards the promotion of e-commerce adoption by Indonesia's SMEs. This should include training and education programs designed to reduce the level of discomfort and insecurity about these technologies. Coupled with this is the need for further government action to provide certification of online stores to verify buyer and seller identity and deal with the security of financial transactions. Larger firms should also provide technology transfer and free training to SMEs to help this technology adoption process. Banks and telecommunications firms were specifically identified as having a key role in assisting SMEs engage with e-commerce. Universities were also important to educating future small business entrepreneurs and enhancing the level of knowledge of e-commerce. In

conclusion the paper points to the opportunities that e-commerce offers to SMEs in developing economies, particularly in terms of the reduction in transaction costs of online trading.

The second paper by Nyame, Boateng, Gyamfi and Asabere (2013) is from the *International Journal of Innovative Technology and Exploring Engineering* (IJITEE). Conducted in the central business district of the city of Adum, Ghana, its aim was to understand the level of ICT deployment across supply chains used by SMEs in that country. Survey data were collected from a sample of 2,816 firms. This survey found that the majority (98%) of the businesses were aware of ICT and the associated digital technologies that could be employed for e-commerce. However, most respondents (76%) did not see any need for such technologies even though they could afford to buy them. The most commonly used device for business transactions was the mobile phone and this technology was used purely for voice communication and not for online transactions. Very few firms used office technologies such as photocopiers, fax machines, printers or scanners. Even the use of bar code scanners was low with only 6 per cent of firms reporting their use. Business support software systems and point of sale (POS) technologies were more commonly found with either off-the-shelf or customised systems. Nevertheless, the authors note in their paper that most of the SME owner-managers who were surveyed failed to appreciate the value of computer-based decision support systems. Only 35 to 41 per cent of owner-managers reported they found the use of computer systems to be 'excellent' or 'good' in terms of the value they provide. The study also found that most owner-managers conducted business via face-to-face exchanges and that just over half (54%) of firms did not have internet access. While the paper is largely descriptive in nature it provides an interesting snapshot of the level of ICT deployment and e-commerce engagement amongst SMEs in a developing economy such as Ghana. It reveals a very low-tech environment for such firms and a reliance on more traditional approaches such as interpersonal communication supported by telephone voice exchanges. The paper concludes with recommendations suggesting more action by government to develop an 'ICT policy framework' that can be used to guide the adoption of digital technologies amongst SMEs and help to enhance their competitiveness.

The third paper by Rahman and Lackey (2013) is from the *International Journal of Network Security & its Applications*. This examines the issue of security systems for the protection of SMEs engaged in e-commerce. The paper highlights the growing level of cyber-attacks being directed against small companies and the nature of such threats. Among the risks faced by SMEs engaging in e-commerce are damage to technical systems and data files, financial loss, reputation damage, lost productivity, loss of confidential customer information, and even black-mail. A range of data security threats are discussed in the paper including those relating to web server software, e-commerce store data, plus Trojan horse, Malware, and denial of service attacks. They also provide a detailed outline of how such attacks are undertaken before discussing the appropriate protection systems that should be in place. These include adopting adequate e-commerce security standards such as ISO 17799 and having documented security policies in place. SMEs are also advised to consider such things as physical security of systems, controlling who has access to systems, monitoring use and access, plus having protections in the form of usernames, passwords, authentication protocols, swipe cards and even biometrics. A wide range of other security issues are discussed in detail and for anyone seeking a quick overview of the main things to consider in relation to the securing of e-commerce systems for SMEs the paper is worth reading. As the authors conclude, SMEs are an increasingly common target for cyber-attack. Any owner-manager seeking to engage in e-commerce needs to seek support and set up appropriate security for their systems. Preventing such attacks is clearly much better than trying to recover from the loss and damage caused by such criminal or malicious behaviour.

### SMEs and e-business

Five papers reviewed for this article were focused on e-business. The term 'e-business' refers to the use by a business of ICT to enhance production processes, customer engagement processes, and internal management processes. Rather than focusing on buying and selling via external supplier or customer engagements as in e-commerce, the concept of e-business relates to:

... achieving business goals in which technology for information exchange enables or facilitates execution of activities in and across value chains, as well as supporting decision making that underlies those activities (Holsapple & Singh, 2000, p.159)

The first paper by Caldwell, Harland, Powell and Zheng (2013) was published in the *Journal of Small Business and Enterprise Development* and examined the risks SME owner-managers perceive in relation to engagement with e-business activities within supply chains. The study examined 29 firms across four supply chains (construction, clothing, computer consumables and assistive technology) in the United Kingdom (UK). The methodology involved interviews with a range of managers from SMEs and larger 'focal' firms within each supply chain. At least six major risks were found as being commonly perceived by the SME owner-managers across all supply chains. These related to: (i) the risk of becoming dependent on a single customer; (ii) the risk of not getting paid; (iii) the risk of the industry losing 'critical mass' as the number of firms in the supply chain shrank; (iv) the risk of cannibalising existing conventional business systems; (v) the risk of losing personal contact with key customers; and (vi) the risk of losing transparency in supplier-buyer relationships. All supply chains had adopted 'e-auctions' but many SMEs were unhappy with this due to a perceived lack of information on the nature of the work they were bidding for. They generally wish to engage with their customers on a face-to-face basis as one respondent explained:

It's only when you meet people that you know what they are about. If they seem like they really know their stuff, if what they say – a delivery, say – actually happens, then you build up confidence and they will buy from you. You can't portray confidence over the Internet. (Caldwell et al., 2013, p. 706)

The findings from this study provide valuable insights into the process of how SMEs engage in e-business via supply chains. It is a useful paper in that it provides detailed evidence of owner-managers concerns over adopting e-business and highlights the need to consider the largely personal 'hands on' nature of small business management. This is illustrated in the concerns of losing personal contact with customers and the impersonal nature of securing work via 'e-auctions'. It is certainly worth reading for anyone studying e-business from a small firms supply chain perspective.

The second paper by Grant, Edgar, Sukumar and Meyer (2014), in the *International Journal of Information Management* also examined owner-manager perceptions of the risks associated with e-business. Drawing on a sample of 125 SMEs in the UK it explored the differences in perceived risk and benefit of owner-managers from young firms (i.e. < 2 years old) to those from more established firms. The study tested three hypotheses using measures of risk in e-business (e.g. viruses and worms, denial of service attacks, cyber-crime), and Kruskal-Wallis one-way analysis of variance (ANOVA) tests to examine differences between the risk perceptions of owner-managers with different levels of experience with e-business. The study found that owner-managers with less experience of e-business were more likely to perceive less risk and greater benefit to its adoption, particularly in relation to legal and compliance risks. It also found that the experience of employees within the firm in relation to e-business was likely to influence the owner-manager's decision to invest in e-business technologies. The greatest risk in e-business identified by the owner-managers was in relation to security breaches, followed by



viruses and worms, then credit card fraud. The study points to the key role played by the owner-manager's level of experience and highlights the need for e-business training and education programs to address risk issues and to recognise that it is not the industry in which the firms are located that matters, but the level of experience of the owner-managers.

The third paper by Chong, Ooi, Bao and Lin (2014), in the *Journal of Knowledge Management* examined the effect that knowledge management has on the adoption of e-business by SMEs engaged in supply chains in Malaysia. A sample of 136 firms was surveyed with questions relating to knowledge acquisition, dissemination and application and the firm's adoption of e-business technology. Multiple regression analysis was used to test three hypotheses and the findings supported two of these suggesting that knowledge acquisition and application are significant determinants of e-business adoption. The paper indicates that helping SMEs adopt e-business technologies can be facilitated by addressing the owner-managers' knowledge and awareness of the nature and benefits of these systems and how they can be acquired by the firm and then applied into their business operations. For large firms seeking to engage SME suppliers or customers in e-business attention should be given to knowledge management and a process for educating owner-managers and then assisting with implementation of these technologies.

The fourth paper by Gupta, Seetharaman and Raj (2013), from the *International Journal of Information Management* examined the adoption and use of cloud computing by SMEs. The research took place in Singapore and drew on a sample of 211 owner-managers. The study tested a total of 15 separate hypotheses and used Partial Least Squares (PLS) to assess a structural equation model (SEM). Smart PLS software was used to do this analysis (Kock, 2012). A total of eleven of the original hypotheses were supported by the final model. The study's findings suggest that an SME's decision to adopt cloud computing is likely to be motivated primarily by ease of use and convenience, with security and privacy in second place followed by a desire to reduce costs and then reliability. The study also indicates that there is a negative relationship between the adoption and use of cloud computing and sharing and collaboration by SMEs. The paper recommends that cloud computing service providers seeking to engage small business clients need to offer highly reliable systems that are easy and convenient to use. Such services should offer 'high uptime' and entice SME owner-managers to make cloud-based services their 'default choice' for storage and backup. This will require cloud-based service providers to engender trust in their security and reliability. From a research perspective the paper offers a better understanding of the factors that influence the adoption of cloud-based computing by SMEs and through the use of the SEM analysis some of the relationships between these factors.

The fifth paper by Jones, Simmons, Packham, Beynon-Davies and Pickernell (2014) from *International Small Business Journal* explores the attitudes of owner-managers towards the adoption of ICT. This study involved 10 longitudinal case studies undertaken over a period of 18 months with micro-enterprises from the UK. In each case the interviews took place with the firm's owner-manager. The cases revealed that these sole-proprietor micro-businesses viewed the use of ICT as an 'essential resource' particularly for market research as well as operations. Fast broadband access was deemed critical to enabling the firms to conduct their daily business activities and remain sustainable. As the following owner-manager comments attest (Jones et al., 2014, p. 293):

ICT has made an immediate contribution. It helps my business be more efficient in customer response through applications that improve customer relationships, which gives a more professional impression to customers and makes us appear much bigger than a sole-proprietor enterprise. Overall, strategically, it helps ensure the sustainability of my business. (Amanda, owner/manager, Enterprise J)

We have now got a European and international customer base instead of virtually all local customers. It's still small, but growing, accounting for approximately 10 percent of all sales at the moment. The nature of the customer base has changed from being largely student-based towards the dedicated record collector of an older age. (Jules, owner/manager, Enterprise B)

However, not all owner-managers viewed ICT so positively. Many saw the adoption of ICT as a basic requirement to support administrative or operational activities, not as a strategic tool. These firms made little use of ICT for e-commerce or e-business. The adoption of ICT was also found to have been driven by customers who expected to see websites and some online interaction. In other cases it was suppliers or competitors that triggered the owner-manager to invest in ICT. When the longitudinal data was examined four of the 10 case study firms had made significant changes to their use of ICT. These included major content updates and website redesign, to the firm transitioning into a pure e-commerce business model. A further firm had made incremental minor changes to their use of ICT, while the other five firms had made no advances. One case had even removed their website. These managers simply did not view their websites as being of sufficient strategic value to invest the time required to keep them up to date. However, for the firm that had transitioned into a new e-commerce business model the value was profound:

There was obvious trepidation, moving from a traditional selling storefront to a pure online operation. However, it has been relatively painless and the business is thriving. We are getting new customers from all over the place. The website has helped, but you still need to be efficient and knowledgeable of what it can do. (Jules, owner/manager, Enterprise B) (Jones et al., 2014, p. 297)

According to Jones et al. (2014) the study highlights the importance of the owner-managers' perceptions of the value of investing in ICT. Most micro-businesses will have short term planning horizons and limited time to devote to major technology projects. They will need to see an immediate return to any investment, either a reduction in costs or an increase in sales. Any government policy strategy to help bring more SMEs online will require programs that can offer immediate benefits to ICT adoption, plus direct assistance, education and support services for implementation.

### SMEs and e-marketing

The term 'e-marketing' refers to the use of ICT by firms to undertake marketing and promotion that complement e-commerce and e-business strategies. Five papers explored the engagement by SMEs with e-marketing. The first paper by Corley, Jourdan and Ingram (2013) from *Electronic Markets* is a content analysis of the research literature published over the period 1994–2013 in the major information systems (IS) and marketing journals. A total of 411 papers were examined for their study, which aimed to better understand the major trends taking place in the field of IS literature. The authors used a journal ranking system initially proposed by Peffers and Tang (2003) to identify their papers and then adapted a classification system from Neuendorf (2002) to sort them by research strategy and topic. The most common topic of study was found to be business models for e-marketing (approx. 41% of papers). This was followed in turn by internet advertising (22.4%), assessing the effectiveness of e-marketing campaigns (16.5%), use of Web 2.0 technologies (approx. 6% of papers), and search strategies in e-marketing (approx. 4% of papers). The balance of papers were focused on topics such as security and privacy issues, ethics, piracy, customer relationships management (CRM) systems, financial and technological design and the economics of the internet. For any researchers seeking to start an investigation or conduct literature reviews into the field of e-marketing this paper is a useful starting point.

The second paper by Eid and El-Gohary (2013) from *The Service Industries Journal* examines the impact of e-marketing on the success of SMEs in marketing their services. The study drew a sample of 114 SMEs from within the UK and surveyed them to explore their use of e-marketing and its subsequent impact on marketing performance and effectiveness. The data from the survey was subject to exploratory and confirmatory factor analyses to test the reliability and validity of



the constructs that measured: (i) pre-sale activities; (ii) after-sales activities; (iii) marketing performance, and (iv) marketing effectiveness. Analysis of the relationships between these factors and e-marketing budget and e-marketing tools was undertaken with an SEM technique using the AMOS statistical software. The strongest relationship was found between: the e-marketing budget and pre-sales activities ( $\beta .536$   $p < .05$ ); e-marketing budget and marketing effectiveness ( $\beta .516$   $p < .01$ ); after-sales service and marketing effectiveness ( $\beta .472$   $p < .01$ ), and after-sales service and marketing performance ( $\beta .432$   $p < .01$ ). These findings suggest that the investment SMEs make in e-marketing can have positive effects on marketing success as measured by new business generation and reduced cost of goods sold. This in turn can lead to higher profits, enhanced market share and growing brand equity. The importance of both pre and post-sales marketing activity is also an interesting finding that SME owner-managers should take note of when considering e-marketing.

The third paper by Harrigan and Miles (2014) from *Small Enterprise Research: The Journal of SEAAANZ* investigated the factors considered critical to the use of social media by SMEs for customer relationship management (CRM) activities. It used an online survey to draw a sample of 156 SMEs from the UK and examined their use of social media for CRM (social CRM) activities. A principal component analysis (PCA) was used in the SPSS statistical software to identify seven underlying 'factors' that represented the 39 items contained in the online survey questionnaire. These encompassed: (i) 'online communities' (the fostering of online communities of customers by the firm); (ii) 'social media support' (the support that social media provides to other marketing and sales activities); (iii) 'information capture' (the collection and integration of customer information from other sources); (iv) 'information use' (the use of customer information to assess customer value and engagement); (v) 'customer relationship orientation' (the strengthening of customer relationships for retention and loyalty); (vi) 'social media data' (the use of social media to collect customer data for CRM); and (vii) 'customer communication' (the nature and frequency of the firm's interaction with customers). This factor structure is an interesting contribution of the study to academic researchers seeking to explore social CRM and e-marketing. However, the study also provides guidance to small business owners, suggesting as it does the importance of engagement with customers via social media the use of such tools as a supplement to more conventional CRM systems. The most common social media tools used by the firms in this study were LinkedIn, Twitter, Blogs, Facebook and YouTube, which were used by most or the majority of respondents. Far fewer firms were found to be using mobile apps (24%), which is an area now rapidly growing as business moves onto mobile online platforms such as smartphones and tablets.

The fourth paper by Kim, Lee and Lee (2013) from *International Small Business Journal* aimed to develop a conceptual model of Web 2.0 technologies and their use by SMEs. The term 'Web 2.0' refers to the use of the internet for online platforms such as wikis, blogs and social media that foster peer-to-peer communication and sharing. This involves a range of applications for business-to-consumer (B2C), business-to-employee (B2E), business-to-employee-to-employee (B2E2E) business-to-employee-to-consumer (B2E2C), and business-to-employee-business (B2E2B). A sample of 100 SMEs from the United States was drawn for the study. Half of these firms were selected from data published on 'Greatplacetowork.com' that lists the 50 best SMEs to work for in America. The other 50 firms were randomly collected from an online database. The data collection process involved an analysis of the firm's websites and online presence. It then used t-tests to compare such Web 2.0 technology use by the top 50 'best' firms against the bottom 50. Significant differences were found between the two groups in relation to networking, information sharing and collaboration. The 'best' SMEs were found to make much greater use of Web 2.0 technologies than the other firms. According to the authors the use of Web 2.0 technology will help SMEs 'level the playing ground' with their counterparts

in large firms. They conclude that SMEs that fail to adopt Web 2.0 technologies will 'be at a critical strategic disadvantage'.

The final paper is a practitioner oriented article by Lahuerta Otero, Munoz Gallego and Pratt (2014) from *Business Horizons*. This examines the use of Web 2.0 technologies and e-marketing via intermediaries to attract customers to the firm's website. It offers four guidelines for firms seeking to improve the flow of customers to their websites. The first of these is to boost search engine optimisation (SEO) through the linking and back-linking of a firm's website to other websites, connecting with social media sites (e.g. Facebook, LinkedIn, Twitter) and including a blog on the site. The second guideline is to make use of 'infomediaries' or websites that provide a virtual market place for other firm's (e.g. Tripadvisor, HomeAway.com). Good 'infomediary' websites provide support to firms in relation to presenting their information and can provide opportunities for low-cost advertising. The third guideline is for the firm to deliver value to customers by ensuring they maintain a well-designed website. This requires regular updates of content, readability and ease of use of webpages. The fourth guideline is to leverage social media through which the links back to the firm's website can boost SEO. For managers and owner-managers of SMEs seeking to gain a better understanding of how to make best use of their company website, this paper is very useful.

## Discussion

These 16 papers offer a cross-section of the most recent literature relating to SMEs adoption and use of digital technologies for e-commerce, e-business and e-marketing. The first three papers reviewed here highlight the importance of digital technologies to SMEs, but only if the task environment within which the firm operates is appropriately structured, and if the firm can align its adoption of such technologies with strategic or major organisational strategies. This was the message delivered by Cataldo and McQueen (2014) and supported with strong empirical evidence by Colombo et al. (2013). Further, as Alonso-Almedia and Llach (2013) suggest, the ability for ICT adoption and use to have a significant influence on an SME's performance and competitiveness is likely to depend on the firm's ability to adequately train employees in the use of such systems.

The three papers addressing e-commerce provide a strong case for helping SME owner-managers appreciate the opportunities and threats of online trading. As the papers by Astuti and Nasution (2014) and Nayme et al. (2013) show, the adoption and use of e-commerce among SMEs is limited less by their ability to afford the technology than by their ability to appreciate its value. Where owner-managers understand the value of e-commerce they are likely to adopt and use it. However, as Rahman and Lackey (2013) indicate there are also many threats and risks to SMEs when they engage in e-commerce. As such any education or information programs targeted at SMEs to encourage e-commerce activity should also include advice on cyber-crime and the security measures that should be adopted.

The five papers relating to e-business provide interesting insights into the way owner-managers of SMEs think about the adoption of e-business systems. The findings suggest that while many small business operators are likely to see benefits in adopting such digital technologies they will also have significant concerns over technical, financial and market risks. Large firms seeking to provide e-business technologies, or wanting their SME supply chain partners to engage in the adoption and use of such technologies should take notice of these concerns. As the use of digital online e-business systems grows it will become increasingly important for firms to engage with this technology. SMEs that fail to engage are likely to struggle. It is therefore important that such fears and concerns over e-business adoption are addressed through education, information and enhanced systems that reduce these risks.

Finally the five papers associated with e-marketing emphasize not only the growing level of interest by academics in this area, as shown by Corley et al. (2013), but also the way in which SMEs can take advantage of this digital technology to enhance their marketing. The Internet offers small firms the ability to reach a range of audiences that were not previously possible and at a cost that is no longer prohibitive. However, as Eid and El-Gohary (2013) show, the owner-manager must be willing to invest in the technology and develop a coherent e-marketing strategy that is integrated into their pre and post-sales marketing activities. This can now widen its focus to include the use of Web 2.0 and social media, building two-way and three-way communications between customers and the business that can help to build strong CRM platforms, and enhance customer loyalty. This was the message from Harrigan and Miles (2014) who provide a useful framework for thinking about 'social CRM', but who also point to the relatively low adoption rate of mobile apps by SMEs. Yet as Kim et al. (2013) suggest, any small firm that fails to adopt Web 2.0 technologies is likely to place itself at a critical strategy disadvantage. This view is reinforced by commercial research undertaken by Accenture (2014) whose global survey of 6,000 people highlight the growing trend amongst consumers to own smartphones and tablets. SMEs not making best use of these technologies will risk being marginalised. However, the adoption and use of digital technologies such as Web 2.0 social media and websites is within the reach of even the smallest of firms. Further, as shown by Lahuerta Otero et al. (2014) there are clear guidelines that if followed will help owner-managers get the best return for any investment they make.

## Conclusion

Growth in the adoption of digital and online ICT has been one of the most significant changes to the world's economy since the end of the 1980s. Digital infrastructure including online storage, computer processing power and bandwidth has all increased significantly while their costs have fallen (WEF-Deloitte, 2012). Around the world governments have recognised that high-speed broadband infrastructure is critically important to future economic growth. This has seen the European Union (EU) setting a target of having all Europeans able to access Internet speeds of more than 30 Mbps by 2020. Further, the EU wants at least half of all European households to have Internet speeds of over 100 Mbps by the same date. For SMEs the need for high speed broadband technologies will also grow. In sectors such as education and training, where online learning will be a major feature of future service delivery, the minimum requirement will be 100 Mbps for both uploading and downloading. Other service providers and even farmers will need to have similar broadband services as they will be engaging increasingly in file sharing with images, video, 3D models and teleconferences (Skouby, Falch, Henten & Tadayoni, 2014).

The outlook for at least the next 15 years is for consumers to increasingly be online and mobile. This will effectively require businesses who seek to attract and retain their patronage to embrace digital online technologies and engage actively with e-commerce, e-business, social-CRM and e-marketing. We can also expect to see a push for greater 'e-government' strategies where business and community engagement with government agencies will take place via web-based platforms (Van der Wee, Verbrugge, Sadowski, Driesse & Pickavet, 2015). Any SME that fails to adopt ICT systems and become actively involved in this digital economy will face becoming marginalised and at serious risk.

The message coming from this review of the most recent academic literature on how SMEs engage with digital technology is both positive and negative. On the positive side these studies show that despite many potential costs and risks, it is feasible for even the smallest of firms to engage successfully with digital technologies. This can provide SMEs with access to a much wider range of market opportunities than they might expect via more conventional offline

strategies. It can also help them to retain customers and secure information on customer and market trends at a much lower cost than had previously been thought possible. The cost of online ICT systems has now fallen to a level where most SMEs can afford to participate in the digital economy. However, what will determine whether or not SMEs do adopt ICT is the mindset of their owner-managers. Most small business operators are time poor and have short planning horizons. They will need to see the benefits of any investment in ICT, and as shown in the papers reviewed here, they will need to better understand the costs, risks and benefits of doing so.

Throughout the world's economies SMEs comprise about 99 per cent of all firms, employ at least half the workforce and contribute more than half the value added to the GDP (OECD, 2010). For government policy makers seeking to stimulate economic and employment growth it is vitally important to ensure that their SME sector is not locked out of the digital economy. This is likely to require a 'carrot and stick' approach. The 'carrot' can include programs designed to help SMEs embrace the use of digital online technologies and measures to reduce the cost of such software and hardware should be considered. The provision of high quality, high speed broadband infrastructure is also essential. There should also be provision of information, education and support programs that are targeted at owner-managers to help them better understand the nature and importance of ICT, plus how to implement it for e-commerce, e-business and e-marketing. The 'stick' can involve a shift to e-government strategies that require SMEs to engage via the internet for all regulatory and compliance activities. This can include such areas as taxation, licensing and government procurement. To make such policy initiatives work will require governments to invest significantly in their own digital infrastructure including e-commerce, e-business and e-marketing programs.

For the owner-managers of SMEs the decision to engage in the digital economy and to invest in ICT systems to allow e-commerce, e-business and e-marketing programs to take place is no longer an option. While some industries are being hit harder by the advance of digital technologies than others, the global trend suggests that few sectors will be able to avoid being touched by it. The adoption and use of online, digital and mobile ICT systems by even micro-businesses is now far easier than it has ever been. Such technologies enable small firms to reach millions of people, connect with global supply chains, cost-effectively track customers and enhance internal operations. They are an essential part of the business owner-manager's tool box and should not be ignored.

### Note

1. The term "SMEs" refers to firms with fewer than 250 employees and annual turnover of less than €50 million.

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