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Ready, willing and capable

How can SMEs gain competitive advantage from using Internet-based technologies?

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Abstract

SMEs can potentially gain competitive advantage from Internet-based technologies, because these require less investment and are more flexible than traditional Information Technologies. However, availability of IT resources is not enough. Organisations need particular competencies in order to deploy their resources effectively. Strategic application of these competencies can then lead to distinct organisational capabilities which provide competitive advantages. This paper presents a case study of a small organisation that was keen to exploit the potential of Internet-based technologies to help them compete in a very tough environment. It was found that Internet-based technologies enabled tactical quick-wins and hold the promise of potential strategic benefits through the creation of distinctive IT resources. However, it was shown that there was a need to develop competencies, particularly around capturing business needs as well as vendor management, before strategic capabilities could be realised. As SMEs have to be responsive to dynamic environments, these competencies and capabilities need to be enhanced and maintained by embedding IS management in overall management processes.

Key words: SMEs, Internet-based technologies, IS capabilities, Case study

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Abstract

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1 Introduction

This paper presents the current state of ongoing case study research into the potential for SMEs to use Internet-based technologies for gaining sustainable competitive advantage. SMEs are medium, small and micro enterprises where the total number of employees is less than 250 (Commission of the European Communities 1996). Though relatively small in scope, they are often considered to be the ‘backbone of the European economy’ (Eurostat 2012). In 2008, 99.8% of enterprises active within the EU-27’s non-financial business economy were SMEs (20.9 million), accounting for 66.7% of all jobs and 58.6% of value-added within the non-financial economy (Eurostat 2011). Similarly, in the UK, 99.4% of all enterprises are SMEs, which account for 59.4% of total private sector employment and generate 50.1% of private sector turnover (Mason et al). SMEs differ fundamentally from larger organisations in a number of (related) areas: organisational structure, dynamism, resource poverty, external environment, strategy and importance of the owner/manager (see Grant et al 2010: 168—171). In other words, they are not simply ‘a little big business’ (Welsh

and White 1981: 18, quoted in Grant et al 2010: 168). This has implications for their (strategic) use of Information Technology (IT) and Information Systems (IS).

Internet technologies have had a profound impact on every aspect of businesses, be they large or small. 'E-business' goes well beyond e-commerce, or buying and selling over the web, and encompasses the potential transformation of any business process by the use of Internet technologies (e.g. Chaffey 2011, Kalakota and Robinson 2000). According to Murphy et al (2007), Internet use in SMEs can be seen as relating to two primary domains: communication and transaction. Johnston et al (2007) find that SMEs report significant financial gains from applying 'Internet Business Solutions'. They suggest a more granular categorisation of e-business, which focuses on the use of The Internet to enhance or improve various business processes. However, the role of The Internet in *sourcing* Information Systems (IS) supporting these business processes seems to be largely overlooked.

Our research focuses on the use of The Internet as a delivery mechanism for IS services, replacing or reducing the need for organisations to invest in Information Technology. Referring to this as 'Internet-based IT', it implies that computing is delivered as a service over the Internet, rather than bought as a product. This is also known as 'cloud computing', 'web hosting' or 'web services'. Software can be delivered as a service over the Internet ('Software as a Service', or SaaS), so there is no need to install and run the application on the organisation's own computers. This also reduces the need for hardware – as only client machines will be needed (e.g. desk top computers, tablets, mobiles). Taking this further, an organisation can use 'Platform as a Service' (PaaS) to avoid buying and installing servers, software, data-center space or network equipment. This means that there is, for example, a potentially far greater storage capacity, without having to buy more equipment. The aim of our study is to investigate the potential for SMEs using such Internet-based technologies to gain competitive advantage.

In the next section we will briefly investigate Internet-based technologies and introduce an IS capabilities perspective to explore their implications for SME competitive advantage. Section 3 then goes on to discuss how this relates to broader IS Strategies in SMEs. Section 4 discusses the research model for this study, followed by (in section 5) the findings from a case study in which an SME is observed exploring the possibilities and limitations of Internet-based technologies for competitive advantage. Finally, section 6 presents a brief discussion with conclusions following in section 7.

2 Internet-based technologies and IS capabilities

Information Technology (IT) investments form a large part of many organisations' spending. However, owning IT hardware and software can be risky and cumbersome. IT develops rapidly, so hardware and software could be outdated and obsolete quickly. It can also take a large capital expenditure, making it too expensive for smaller organisations to acquire good quality equipment. Moreover, hardware needs looking after, both in terms of security and 'wear', for example making sure it doesn't overheat; this also requires expertise that might be lacking in smaller organisations.

Outsourcing IT has been a favoured approach for some decades now to reducing IT investment, buying into the latest hard- and software as well as dedicated expertise (e.g. Lacity & Willcocks 2008). However, outsourcing can limit potential competitive advantage gained from IT, and can lead to unwanted dependency on outsourcing partners, amongst other disadvantages. The use of Internet-based technologies can be seen as a take on outsourcing, which is particularly attractive to SMEs (Ward and Peppard 2002). A formal definition comes from Ratnasingham (2004: 382) as quoted in Webb and Schlemmer (2008: 4):

"Web services [are] modular internet based business functions that perform specific business tasks to facilitate business interactions within and beyond the organizations. By this definition Web-services reflect and refer to loosely coupled reusable software components that are able to semantically encapsulate discrete functionality and are programmatically accessible over standard internet protocols."

Cloud computing appears to be particularly attractive for smaller organisations that lack the budget and in-house capacity to invest in, and maintain, up-to-date IT. For example, Lockett et al (2006), in a study of 8 UK SMEs, found potentially significant costs savings from using web services (in the shape of hosted enterprise applications). Using cloud computing, SMEs can rent the latest and most appropriate applications, being able to scale up and back as required, without investing in IT that might get out of date quickly. It is possible that this will allow SMEs to make better use of IT for competitive advantage. Previously, they lacked the volume and budget to buy IT that would help them to compete with larger, richer organisations. And, if they did seriously invest in IT, it would possibly turn obsolete before a positive return on investment was achieved, turning it into a competitive *disadvantage* instead. Now, because they are smaller and more agile, SMEs might be in a better position than large organisations to gain maximum benefit from Internet-based technologies.

We therefore hypothesise that Internet-based technologies could help SMEs to ‘punch above their weight’ in competing with much larger organisations. In order to achieve this, management of SMEs would need to understand what role such technologies could play in achieving competitive advantage. Webb and Schlemmer (2008) argue that, as such technologies are relatively inexpensive and accessible, competitive advantage is not derived from simply ‘having it’, but has to come from “individual and organisational capabilities in the development and management of web services...” (p. 5). This fits with a broader IS capabilities perspective, which holds that, as IT investments as such can be easily duplicated, sustainable competitive advantage can only be derived from the creation of unique IS capabilities (e.g. Mata et al 1995) rather than from the IT investments themselves (e.g. Chan 2000). Santhanam & Hartono (2003) show that firms with superior IT capability indeed perform better than average. Therefore, in order to understand how SMEs could benefit from Internet-based technologies, their role in building SME IS capabilities needs to be explored.

3 IS/IT Strategy, capabilities and competences in SMEs

As stated above, we propose to investigate how Internet-based technologies can be used to form SME IS capabilities in order to gain strategic advantage. The capabilities perspective originates within a ‘Resource Based View’ of organisations, which looks to explore how an organisation’s ‘strategic assets’ can be sources of strategic advantage (e.g. Barney 1991). Teece et al. (1997) see dynamic capabilities as the firm’s ability to update and improve the sources of its own competitive advantage, thus positioning them as extended strategic assets. SMEs need distinctive assets and capabilities to be successful and coexist with, or even compete with, larger enterprises. Yu (2001) explores the distinctiveness of SMEs, concluding that entrepreneurship and a simple capital structure are their key assets; entrepreneurship, because it is inherently inimitable; and a simple capital structure, because a lack of investment in specialised assets allows quick responses to change. This suggests that renting rather than owning IT would be a positive development and fits the simple capital structure very well. Capabilities literature, however, suggests that outsourcing reduces the potential of resources to be a source of innovation (Langlois & Robertson 1995). We therefore need to explore how SMEs can strike the right balance between creating flexibility by renting, rather than owning IT assets, versus investing in dedicated IT assets that hold a promise of providing a competitive advantage.

Santanam and Hartono (2003) point out that one of the difficulties in measuring the impact of IS capabilities on firm performance is the lack of an agreed framework for measuring IS capabilities. They used a dichotomous perspective, classifying organisations as either ‘IT leaders’ (as selected by industry experts) or not. Feeny and Willcocks (1998) provide more detail by proposing 9 core IS capabilities, that are investigated further in Willcocks et al 2007. These capabilities relate to three ‘enduring business challenges’: Business and IT vision, Delivery of IS Services and Design of IT architecture. Sourcing of IS is an important aspect of the Feeny and Willcocks framework. Their 9 capabilities are briefly explained in Table 1.

Leadership	Integrates the IS effort with business purpose and activity
Informed Buying	Manages the IS sourcing strategy to meet the needs of the business
Business Systems Thinking	Ensures that IS capabilities are envisioned in every business process
Relationship Building	Gets the business constructively engaged in operational IS issues
Contract Facilitation	Ensures the success of existing contracts for external IT services
Architecture Planning and Design	Creates the coherent blueprint for a technical platform that responds to present and future needs
Vendor Development	Identifies the potential added value from IT service suppliers
Contract Monitoring	Protects the business’s contractual position, present and future
Making Technology Work	Rapidly trouble-shoots problems which are being disowned by others across the technical supply chain

Table 1 Nine Core IS Capabilities (Willcocks et al 2007: 128)

As Ward and Peppard (2004) point out, however, these are not so much capabilities, as *competencies*. This distinction is important, as for example explained in Duhan (2007). Basically, “organisational capability refers to the strategic *application* of competencies”, while competencies, in turn, are an organisation’s capacity to deploy combinations of a firm’s specific resources to accomplish a given task (Ward and Peppard 2004). As they are more tangible, we will focus in this study on exploring competencies as a stepping stone to capabilities.

While small organisations are less likely to dedicate resources to a formal process of strategy formulation, a proactive, formal planning of the strategic use of IS is still recommended to optimally benefit from strategic potential. Levy and Powell (2005), for example, suggest an IS Strategy framework with three perspectives: *business context* (strategy and objectives, review of business environment, importance of information and competitive environment), *business process* (review of internal/external processes and IS needs) and *strategic content* (vision for change). Levy et al (2001) make a distinction between ‘strategic’ IS, which should be aligned with the strategic context, and ‘tactical’ IS, such as email. They developed a

‘Focus-dominance’ model for aligning IS with business strategy in SMEs, with dimensions of strategic focus (cost reduction versus value added) and customer dominance (few versus many customers). Though this model helps to understand the strategic role and importance of specific IS, it does not take into account how the assets are sourced. However, following from the capabilities perspective, one could assume that tactical IS are better candidates for Internet-based IT than strategic IS, because they can be a basis for distinctiveness.

4 Research model

Based on the above, this paper will have the following aim: To investigate what IS *competencies* SMEs can develop to benefit strategically from Internet-based technologies. Building on the existing body of knowledge as explored in sections 2 and 3, a research model was developed to investigate this (see Figure 1).

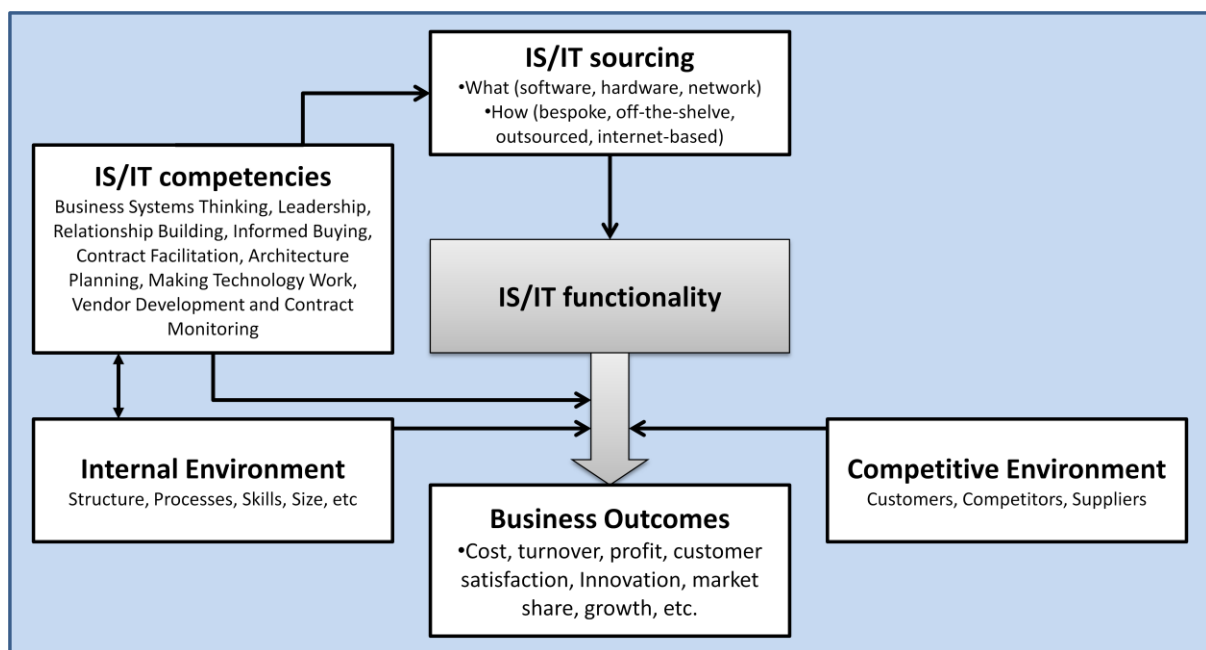


Figure 1 Research Model

The focus of the research is on how an SMEs IS/IT competencies help to achieve appropriate IS sourcing, given the availability of Internet-based technologies. The actual IS sourcing leads to IS/IT functionality, which could, for example, be more or less distinctive and/or flexible, based on the sourcing choices. The IS/IT functionality, mediated by the organisation’s internal (business process), competitive environment (business context) and IS/IT competencies, leads to business outcomes, indicating the success of the sourcing

choices and the organisation's IS capability (as this is the strategic application of competencies).

5 Methodology and Case study

The empirical part of this paper is based on a small talent management consultancy based in Oxfordshire, which has an additional office in London. Its key activities are talent acquisition (resourcing), talent assessment (occupational psychology), talent development (including management and leadership development), performance management, talent engagement, career management and career transition (outplacement). Revenues are based on fees for professional and consultancy services, which are delivered through an associate consultant model. When this organisation realised it needed support to achieve its ambitious goals of gaining competitive advantage from IT, a Partnership with Oxford Brookes University was formed. This Partnership received financial support from the Knowledge Transfer Partnerships (KTP). The KTP aims to help businesses to improve their competitiveness and productivity through the better use of knowledge, technology and skills that reside within the UK Knowledge Base. The KTP is funded by the Technology Strategy Board along with other government funding organisations. As part of the Partnership, a full-time associate was appointed for two years. The aim of the partnership was defined as: "To develop an extensible Internet-based IT infrastructure that will enable [the organisation], an SME, to gain sustainable competitive advantage against large US competitors." Expected outcomes varied from cost-savings from changing the IT-infrastructure and replacing existing (bespoke and outdated) CRM and accounts systems, to enhancing e-learning offerings and remote service delivery. An essential part of the project was the development and embedding of IT management processes to ensure that, in the longer term, the organisation could independently make timely, cost-effective and innovative IT decisions. Considering the commercial sensitivity of this project, the organisation wanted to remain anonymous at this stage, and some details are kept confidential. The project was initiated in March 2010 and the associate started in November 2010.

Data for the case study, to date, has been collected from project documents, minutes and presentations, from attending project meetings and from formal and informal conversations with key people. Additionally, 4 key people (the associate, the academic supervisor, the company supervisor/Chief Operating Officer (COO) and the CEO) answered 5 email questions relating to the role of IT in the organisation.

5.1 How things were

The organisation had quite heavily invested some years ago in a bespoke system that supported most of the business processes (accounting, customer relationships, project and operational management). They relied on one external supplier for maintenance of, and changes to, the system. As over time business processes had changed, the system had been pushed to, and over, its limits. Also, the IT hardware infrastructure was extensive, aging and over-complicated, resulting in high capital and maintenance cost.

Leadership (+)	The original investment in the bespoke system can be seen as showing leadership in integrating IS effort with business activities, though potentially not looking forward enough in terms of longer term business purpose. Other evidence of their belief in the benefit of IT is that they were the first to offer an online career-management portal. However, over time the main system, with much 'patching up', had almost developed into a necessary evil and lost their advantage against the buying power of large competitors. The KTP project was initiated from a re-focussed vision of leveraging IT for strategic benefit and reducing its cost bases in supporting business activities.
Informed Buying (-)	The organisation had heavily invested in the bespoke development of an overall, integrated system, which created a dependency on a sole, small, supplier. Investment in hardware was suboptimal and capital intensive. A bespoke solution had been considered essential to achieve competitive advantage and there was limited awareness of emerging technologies.
Business Systems Thinking (-)/(0)	The old system was set up to support the business processes as they were at the time. However, business processes had changed regularly and considerably over time, and system updates had not resulted in a satisfying level of support for many business processes, leaving some users with a very difficult to use system. There were ideas around introducing more e-learning and remote working, showing vision around using IS to change business processes.
Relationship Building (--)	The start of the project marks the end of an episode, where the difficulties with the old system led to a largely negative attitude towards IT in the organisation. IT was difficult, expensive, cumbersome and blocked changes. Business users in the organisation were largely unhappy with the system, and were not optimistic about the abilities of new IS to achieve improvements.
Contract Facilitation (--)	The relationship with the supplier of the bespoke system was strained. They fully depended on the supplier for even minor changes, which could take the supplier considerable time to execute, at great expense to the organisation.
Architecture Planning and Design (-)	The technical platform was considered complicated and expensive in relation to the needs of the organisation. It had developed over time and wasn't optimised.
Vendor Development (0)	The main relationship was the one with the supplier of the bespoke system, which was an ongoing struggle only because he was the only one that could make any changes. No positive, value-seeking relationship existed.
Contract Monitoring (-)	Before the arrival of the new COO, people in the organisation largely felt they lacked the expertise to manage the organisation's contractual position relating to their IT needs.
Making Technology Work (--)	This was probably the weakest point, as there seemed to be only one mechanism for solving problems, which was through the supplier of the bespoke system. When let down by him, there didn't seem to be much of an alternative.
Symbols between brackets indicating strength of the capability, using Willcocks et al 2007: (++) strong; (+) satisfactory; (0) little or no evidence; (-) serious IT Problems being experienced; (--) escalating to being serious business problems as well.	

Table 2 IS competencies before

Competencies

Table 2 sets out the IS/IT competencies as they existed before the start of the project, derived from the case study data. Though there is evidence of leadership, most of the competencies have led to serious IT problems – both in functionality and costs, with some leading to serious business problems as well. It is very clear that changes will be needed to the competencies in order to enable optimal use of Internet-based technologies. A general ‘lack of expertise’ had been recognised in the project proposals as a barrier to moving forward, indicating an understanding that they didn’t just need new systems, but enhanced competencies.

Sourcing and IS Functionality

The organisation had invested in a bespoke, integrated IS, developed by one small supplier, who had to be called in to execute any changes to the system. It also owned expensive hardware (including servers), leading to overall high maintenance and capital costs. No other routes had been considered feasible, as IT had been seen as a contributor to competitive advantage, in that it should reflect the organisation’s unique, distinctive business processes. So, in terms of functionality, distinctiveness had been a main aim of the IS investments. This was possibly achieved while the business processes themselves were distinctive and fit-for-purpose. However, the systems were unable to cope effectively with changing processes, showing their lack of flexibility. Unfortunately, this also meant that the IS lost their contribution to distinctiveness, reducing the organisation’s ability to adjust to the dynamic business environment. This led to an understanding that, while distinctiveness remained important, flexible IS, supporting business agility, were crucial in the ever-changing competitive environment. Internet-based solutions were considered to be part-and-parcel of this.

Internal and external environment

The organisation continuously faced a very challenging external environment, dominated by very large, often US-based, competitors. There was an increasing need for low-cost, possibly remotely delivered, solutions, while the organisation traditionally provided premium, high-contact services. The organisation had seen some restructuring, dramatically reducing the number of employees, and relocating their London office. They engaged a large cohort of associate consultants, who work on a project basis (hourly paid) in the delivery of the services.

Outcomes

The organisation was struggling to survive in the extremely competitive market. However, they had, in time, realised that drastic measures were needed, so had reduced their cost-base by shrinking the headcount and moving offices. Other cost-reduction measures were also under way, such as those relating to telecommunications. The IT infrastructure was costly and capital intensive, which did not fit with the need for cost reduction. It did not show much by way of positive contributions to outcomes at the time or for the future either.

5.2 How things are changing

Engaging with the KTP was a substantial intervention. It enabled the organisation to employ a dedicated associate for 2 years, as well as gaining advice and support from Oxford Brookes University. This in itself, at least temporarily, enhanced the IS/IT expertise in the organisation. Though this did come at a cost to the organisation, this cost was reduced substantially through the availability of government funding for the KTP. As indicated, the goal of the KTP was not just to enhance the IT infrastructure, but to ultimately leave the organisation with an improved ability to manage IS/IT so it would continue to provide competitive advantage.

Leadership (+), was (+)	Leadership was becoming more effective, as expertise and capacity was brought in to ‘attack’ the barriers to a positive role of IS/IT in achieving business outcomes and supporting business activities. Business decisions were made to change the financial system urgently, in order to achieve early benefits. Partly because of its dynamic environment, the organisation had difficulty defining its needs and future business processes. There was a lack of a methodological approach to formulating these needs. This, in turn, complicated requirements definition and slowed down actual IS development. At the time of writing this case study, a shared vision of some core business processes is developing.
Informed Buying (0/+), was (-)	This was a main driver of the project, as it was thought that going for Internet-based solutions would enable the organisation to benefit from innovative IS, without heavy investments. The first sub-project involved the implementation of a new, cloud-based finance system, with a tight deadline set to fit with the organisation’s financial regime. After frantic searching and comparing different solutions, a networked solution was chosen and implemented, leading to an early win. The provider was considered to be a good partner. This was followed by some other quick-wins, where operational processes could be automated using cheap, Internet-based solutions. The Internet was also used to find and compare solutions, and to access freelance expertise (developers). Also, the organisation no longer owns servers and has started to use some cloud technologies for hosting. The organisation is still building up its expertise in finding and comparing providers, though good use has been made of Internet forums to learn in this respect.
Business Systems Thinking (+), was (-)/(0)	As explained above, the organisation had struggled to define its future business processes, but was starting to develop methods and approaches to get on top of this. IS/IT capabilities are now part-and-parcel of the development of new business processes, both considering off-the-shelf ‘best fit’ solutions that require changes to processes, and envisaging how processes could be optimised and made distinctive with more tailored solutions.
Relationship Building (+), was (--)	With the early quick wins showing the organisation that IS could have a positive impact, the entire team appears to have bought into trying to optimise the role of IS in business operations. For some functions, particularly finance and some operational processes (e.g. event booking), some major changes have already been made.
Contract Facilitation (0), was (--)	The organisation has developed a stronger confidence in their relationship with providers, enabling better contract facilitation. It is unclear if this is strongly embedded yet, and may need some attention. Initial contacts with a potential provider of major development work were disappointing when it turned out to be far pricier than expected. Though it is clear that further substantial investments will be needed, it remains important to achieve this at a realistic cost.
Architecture Planning and Design (+), was (-)	The project involves a wholesale overhaul of the IS/IT architecture, with the explicit aim to achieve a well-balanced and coherent platform. Though, in order to maximise flexibility, they would ideally want this to be fully cloud-based with API connected SaaS products, they are starting to recognise there might be a need for bespoke software development to support particular, distinctive business processes. Their newly developing methodological approach to organisation-wide needs elicitation should further enable this capability.
Vendor Development (+), was (0)	With the negative experience of the relationship with the provider of the previous system fresh in mind, ongoing, future-oriented engagements were firmly on the agenda. Though some use was made of ‘occasional’ labour in the shape of freelance developers (engaged through online portals), a real effort was made to work with providers to enhance solutions.
Contract Monitoring (0), was (-)	With the focus being on many other capabilities, and few substantial contracts entered so far, this doesn’t appear to be high on the agenda. However, creating the right contracts has been part of the development of a more confident relationship with providers. Hence it can be expected that this capability will be further developed together with contract facilitation.
Making Technology Work (0/+), was (--)	Focus is still firmly on future-oriented work, and new systems have all only recently been installed; so there is so far limited evidence of or need for this capability. The growing confidence in managing IT will certainly have a positive impact here.
(++) strong; (+) satisfactory; (0) little or no evidence; (-) serious IT Problems being experienced; (--) escalating to being serious business problems as well.	

Table 3 current IS competencies

Competencies

Table 3 above gives an overview of the competencies as they have developed to this point in time (February 2011). The organisation's IS competencies have shown positive developments across the board. While they set out to possibly switch the whole IS/IT infrastructure to generic Internet-based solutions, it has become clear that some business processes will require bespoke solutions in order to support distinctive ways of working. A competency that was overlooked early on, but has gained prominence, is their ability to identify future business processes, so IS requirements can be formulated in alignment with the business needs.

Sourcing and IS Functionality

At a hardware level, major changes were achieved, as the organisation is now 'server-free', leading to substantial reduction in IT-related capital investments. The new finance system is cloud-based, as are the 'quick-win' systems used to automate some processes. Further investments in IS will follow, though currently the focus is on defining the business needs. It has become clear that their newly developing innovative business processes will need a bespoke, integrated system, rather than a collection of 'loosely coupled' off-the-shelf cloud-based modules. The business is willing to invest in this, though at a reasonable price. The thinking is, however, that the new IS will be web-based 'behind the scenes', but will show characteristics of a desktop application.

In terms of actual new IS, these have been more in tactical than strategic systems, aiming for off-the-shelf, Internet-based solutions. Though the initial thinking had been heavily focussed on flexibility, ongoing thinking about future business processes, has led to the realisation that some systems will need to be distinctive and will require a bespoke approach.

Internal environment and external environment

The external environment remains very challenging, with clients limiting their spending on outplacement and few organisations hiring new staff. Sales is therefore a key process. In order to respond to the changing environment, the organisation has developed ideas for innovative business processes, which would heavily depend on IS. These processes are gradually being implemented and should distinguish them clearly from competitors. They are related to the relationship with their associate consultants and how contracts with clients are set up (details are confidential at this stage, as they are both of commercial importance and affect the relationship with individuals). This means that major changes to the internal environment have been set in motion.

Outcomes

Cost savings have already been achieved by doing away with owned servers, as well as by automating some business processes. The latter has been done with limited spending, while leading to a reduction in headcount, as well as more effective processes. This has probably contributed to the organisation continuing to make a profit, despite the difficult external environment.

6 Discussion

Using the Willcocks et al framework shows how the IS competencies in the case study organisation have been improving as a result of the interventions made. There is potential benefit to be gained for SMEs from applying Internet-based technologies, especially in reducing hardware costs, and automating standard business processes, even when competencies in expressing business requirements are weak. In order for these developments to be sustainable, they need to be supported by good vendor-related competencies. However, it was shown that strong Business Systems Thinking competencies are needed before the potential of Internet-based technologies to contribute to distinctiveness can really be explored. The case study provides some evidence that SMEs are unlikely to gain sustainable benefit from Internet-based technologies without having or developing supporting IS competencies, as was to be expected considering the widespread agreement in IS literature that resources in themselves don't lead to competitive advantage (e.g. Peppard and Ward 2004).

Willcocks et al 2007 distinguish three mechanisms for building competencies: process, culture and structure. In the case study, the *structural* mechanism can be observed in the fact that, with the appointment of the KTP associate, a particular role is created and IS/IT becomes more visible in the organisation. Though his role doesn't come with executive responsibilities (as, for example, the appointment of a Chief Information Officer would), clearly it brings in expertise and capacity. The involvement with the KTP, inspired by the organisation's desire to gain competitive advantage, also meant that the executive team now spend more time on IS/IT related issues. As this is a small organisation, several mechanisms and processes that Willcocks et al discuss are here incorporated in the same, small, team, without the need or option to create particular structures, such as an 'IT center of excellence' or the appointment of 'service delivery managers'. Over time, some specific IS/IT capacity and expertise will need to be retained, though embedding of the Business Systems Thinking

competency needs to be endemic within the entire executive team, if not in the entire workforce. During the project, the organisation realised that a *process* mechanism was needed to achieve this, so an iterative review process has been initiated in which business needs (business processes) are defined and IS briefing documentation is developed. This review process can be developed to, over time, also include broader IT governance issues in order to stay on top of vendors and contracts. Again, process mechanisms in an SME will necessarily be more integrated with the overall management processes. In terms of the *cultural* mechanism, the general attitude towards IS/IT has become more positive, and there is a stronger belief in the need and possibility to use IS/IT for competitive advantage. In order to structure the development of capabilities over time, 'business themes' are recommended (Duhan et al 2001, Earl 1996). One such theme is the new associate engagement model in relation to project performance measurement.

One of the key issues encountered during the research, is the fact that, due to the difficult competitive environment, it has been 'all hands on deck' for the executive team to just keep the business going. However nice it would have been, they couldn't make the world stand still for a while to define their future business processes and develop the appropriate IS to go with that. And even when business processes have been defined, the dynamic environment could challenge the viability of these processes at any time. This shows that it is all the more important to integrate the IS processes in the 'normal' management processes, so reviews can continue to be ongoing. This suggests that an SME's approach to IS Strategy should have an emergent rather than comprehensive nature (e.g. Salmela and Spil 2002). It also means SMEs will need strong Vendor Development competencies in order to be able to keep their IS moving with their business needs. It is unlikely they will be able to maintain the necessary broad set of IS competencies without dedicated IS expertise in the management team.

The Internet has played a much broader role in IS sourcing in the case organisation than just the availability of Internet-based technologies. As was shown, capacity and expertise, in the shape of freelance developers and programmers, could be accessed through specialist portals. The organisation has achieved some major savings this way, while receiving quality outputs. The Internet has also helped with finding and selecting solutions, as there are various portals, review-sites and expert channels available. Through various Internet sources and social media, a rich IS/IT knowledge base could be accessed that can be seen as an additional broad IS support channel. This is particularly important for SMEs with their limited capacity for

building broad and deep IS expertise. It would be interesting to explore in further research how IS competencies in SMEs can be bolstered via the use of Internet-based support and knowledge bases.

7 Conclusion

While this study confirms the expectation that SMEs can benefit from Internet-based technologies, it also highlights the challenges involved. In order to achieve sustainable competitive advantage, incorporating both flexibility and distinctiveness, a broad range of IS competencies are needed. These do, at first sight, not appear substantially different from those suggested by Willcocks et al (2007). However, with more technologies available ‘through the cloud’, more expertise and knowledge available online, and the enhanced possibilities to find and compare providers through the Internet, SMEs do have a much wider pool of IS/IT to tap into. This justifies stronger investment in creating and maintaining the necessary IS competencies to achieve sustainable competitive advantage from using Internet-based technologies. Competencies and capabilities will also need to be enhanced and maintained by embedding IS management in overall management processes in order to respond to continuously changing competitive environments. Further research is needed to investigate the competencies in more detail, as well as benefits achieved, and especially how SMEs can develop the required competencies in light of their limited capacity.

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