



Digital Business Ecosystem

# Market Watch

Emerging Standards and Practices



## **SME Focus**

A look at Survey Results on SME Adoption of and Attitude toward Information Technology



## **Survey highlights**

The surveys introduce a number of different perspectives for raising questions about SMEs and technology



## **Conclusion and further study recommendations**

SMEs are willing investors in ICT provided they can see appropriate benefits

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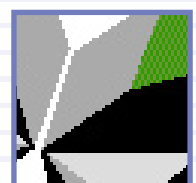
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## SME Focus



The third volume of Market Watch (MW) is dedicated to Survey Results on SME Adoption of and Attitude Toward Information Technology

### Introduction

SMEs are an essential focus for the DBE project. SME software firms will develop commercial software to be deployed on the DBE platform by SME service requestors and providers.

Much of the *raison d'être* for the investment in building the DBE platform is the possibility of overcoming the current digital divide. Many SME organisations cannot afford the expense of providing, locating or consuming services online. E-commerce deployment is still very expensive.

There are other reasons why SMEs are vital for the DBE. The ideas expressed in the business eco-system will be demonstrated by a large number of participating and interacting SMEs. The scientific research foundations for the DBE lie in this complex behaviour of SMEs in the business setting.

But what do we know about SMEs and their perspectives on, and use of technology? What software do they use? How mature are they in their understanding of technology availability and trends and the opportunities associated with sound ICT investment? What can they afford? What are they willing to pay? What support do they need? Who should supply that support? Who should be

their “spokes person”? What impact does industry, location, size, ownership style (and the basic dimensions represented in the DBE codes) have on these questions? What packages are SMEs using? How competent are they with the software they use? Should they be supported in their understanding and use of ICT?

These questions are important to the DBE, especially in marketing the DBE to SMEs, but they are also important for the infrastructure and language developers (such as BML). How sure are we that the DBE we are developing is the DBE SMEs really need, want and will be capable of using at a price that they can afford?

During their analysis of SMEs within the regions, FZI were very sensitive to these questions and included in their surveys a number of important metrics about ICT usage that would help determine the readiness of SMEs to participate in the DBE. Their survey work also indicated the potential opportunities for some of the SMEs to participate in the DBE.

One factor that came from their work is that maturity levels, ICT perceptions and ICT deployment varied considerably between the three regions and within regions. Diversity



and difference seem to be the norm. Some SMEs do not have a very sophisticated ICT setup, while others are reasonably mature<sup>1</sup>.

However, while the specific analysis was necessary for establishing requirements for moving forward with the project, we believe that a more in-depth study of market surveys and studies on SMEs and ICT would be beneficial. The subject will be revisited in a later Market Watch as more aspects emerge.

## Findings

### Approach

The Internet was the main resource used to find survey studies related to SMEs and ICT. Because we wanted to be open about the results, our search strategy was deliberately varied. We used Google and Altavista searching on SMEs, ICT, software, Europe, Asia, the USA, and so on, using synonyms and variations that would help us return interesting results.

This approach does have the following disadvantages:

- The Internet is full of commercial “advertising” in the guise of factual

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<sup>1</sup> See Ines and Hertweck “Briefing of 19th April, 2004 on SME meetings”, Ines “SME Use Case Conference Organiser” and Ines “SME Use Case Leisure Services” all available on the project Collabnet portal.

information sources. The noise levels were very high

- The number of sites returned in even long and complex search strings amounted from tens to hundreds of thousands.
- Date based searches were very inaccurate making it difficult to find web pages containing recent research.
- It is difficult to substantiate published results, which has limited us to sources we believe we can rely on.
- High value research is typically for sale – prices of very useful research papers ranged from \$200 - \$2,000, which is out of scope for a study like this. For example, an interesting Gartner report on SME business software use throughout Asia reports that in China, only 20% of SMEs use ERP software. This report detailing such findings costs \$195.
- Some good studies are highly complex requiring more effort to digest than is allocated to each version of Market Watch. For example, the European eBusiness Market Watch contains an extremely sophisticated and detailed survey on e-business at [http://www.ebusiness-watch.org/menu/Survey\\_2003/](http://www.ebusiness-watch.org/menu/Survey_2003/). Many EC studies are of this nature.

In addition, the surveys themselves are subject to many red-light warning notices.



The prime ones are:

- Sample sizes are small – some studies with as few as 25 SMEs! (but we have included one because it is interesting).
- The variation of study approaches, sample selection processes, locations, industries, demographics and so on make it impossible to undertake comparative analysis (except in the case of the sophisticated surveys as described above, which have been designed for such comparison).
- Even when studies were obviously addressing the same question, many reported contradictory results.
- Most studies did not provide details of their sampling methods, survey techniques or questionnaire practices.

These limitations do temper our results, but the details are still interesting and give us insight we would otherwise not have.

### Survey highlights

The surveys introduce a number of different perspectives for raising questions about SMEs and technology. A taxonomy of issues covered would include application packages used, spending and investment behaviour, knowledge and ability to fully exploit technology, value for business, specific technologies used by SMEs (such as networks, CRM, hardware, ERP), industry, geographic and demographic studies, comparisons with other regions and areas of the world, Historical trends and so on.

It is not possible in a study of this size to consider these different dimensions individually. What we have done is to summarise each survey with an eye to pulling out the interesting (not necessarily true) findings. Here, we make a simple summary of the summaries.

SMEs are concerned with security and trust. They are willing to invest in ICT, but they consider investment of this nature a cost and not really an investment. They expect to see

immediate results and hence typically buy their technology in a piecemeal as need basis and typically do not receive the level of professional services needed to help them fully exploit technology as their large counterparts do. These SME concerns are similar across boundaries, but the literature by the sceptics indicate that we still do not really understand the dynamics of SMEs sufficiently to make sound policy judgements that can do justice to all. Great variations come with size, location, industry, age and ownership.

SMEs are not as disciplined as larger organisations in keeping their applications safe. They are more willing to steal software<sup>2</sup> and less likely to treat their investment in data with the regard it is due.

We finally mention that a future market watch could be dedicated to a specific area of interest on this subject that is deemed important for the DBE project. We make our invitation for suggestions in the concluding section below.

## Survey Sources and result summary

### Personal Computer World

<http://www.pcw.co.uk/news/1158091>.

A survey of 500 SMEs undertaken by the UK Institute of Directors and Dell.

Survey summary:

- Security concerns and wireless computing top priorities. 66% concerned about security and 54% business continuity and disaster recovery.

<sup>2</sup> A number of reports have suggested this, but are not of significant size to include in the detailed summaries. For example, see <http://www.ensignuk.com/news2.php?art=186> “SMEs are worst software pirates”, and bully tactics by BSAA because it is known that SMEs are the most likely pirates of software. See <http://www.zdnet.com.au/news/business/0,39023166,20264496,00.htm>





- 43% are changing their purchasing habits from desktop to laptop.
- Productivity gains the most cited reason for investing in ICT.
- Mass availability of broadband is a key factor in SMEs growing investment in IT [which indicates that such investments are growing, although the survey does not provide information about IT spending growth].
- Annual IT budgets - £13,500 for business of one to 10 employees, £84,900 for those with 11 to 100 employees, and £556,000 for companies with more than 100 staff members.

### Asia Foundation

<http://www.asiafoundation.org/ICT/surveys.html>.

This is a large survey covering Philippines, Sri Lanka and Thailand SMEs. We considered it useful to include surveys from Asia as a point of comparison, especially if we wish to consider less developed parts of Europe. Interestingly, the survey highlighted huge differences in ICT adoption between these countries.

#### Survey summary:

- The IT bubble burst has only had a small impact on ICT investment by SMEs.
- Productivity gains is an important reason for IT investment.
- Another key reason is an “unprecedented connectivity between Asian companies and buyers and sellers in export markets”.

- Key questions addressed by the study are interesting, because they match some of our own questions. For example how is the Internet affecting the small businesses that constitute the bulk of developing Asian economies? Are small business owners taking advantage of the potential benefits of increased information flows and access to new markets through shortened supply chains? How are market forces driving the successful adoption of eCommerce and the Internet by small business in the emerging economies of Asia?
- Communication with customers is the driving force behind adoption of eCommerce.
- Businesses targeting overseas customers appear to experience increased incentives for getting online.
- SMEs are willing to pay for the Internet if they see immediate relevance to their businesses.
- Infrastructure and access speeds remain serious barriers for SMEs, particularly outside the urban areas.
- Security concerns and banking regulations limit adoption of online payments/ transactions (particular problems cited are goods not delivered, poor quality product, payment fraud).



### China Org survey

<http://www.china.org.cn/english/BAT/81957.htm>

This survey was based on a sample of 500 SME company IT decision makers based in the USA. Survey was undertaken by SoundView and Gartner. [We are concerned at many of the survey sample sizes. It gets worse than this, but given the size and diversity of the USA, 500 SME IT decision makers does not seem a particularly healthy number. The survey results are interesting, but how much are they worth?] Results of the survey are:

- SME firms predicted to lead IT spending recovery.
- 2004 predicted increase in spend – 1.6% indicating stall mode changing to controlled spending.
- A strict focus on ROI will remain the rule.
- Security, wireless, Linux, storage and personal digital assistant devices were the hot areas.

### Mori Survey

<http://www.mori.com/polls/2000/euro-sme.shtml>

European Small Businesses Play Russian Roulette With Their Futures. An interesting study by Mori looking into the risks SMEs are willing to take with respect to data back-up and recovery. The study of IT decision makers in 330 companies headlines the report with “the study reveals European Small Businesses Could Lose up to £1,200 Billion”. [This of course assumes that they all lose all their data and potentially at the same time.] But the implications for an individual SME is clear. SMEs are becoming reliant on their IT systems in much the same way that larger firms always have. A summary of the findings show:

- 40% of surveyed firms do not back up their data less than once a week.
- Most firms placed significant value on their data and considered their data mission critical.
- Small business don't know how they can put the safeguards in place to ensure that they back up their files.
- Two extremes were identified – wise owls who understand the financial risk of losing data, can place a value on it and takes steps to backup at least once a week. 15% of French and 23% of UK business fall into this category.
- The headless chicken are aware of the risks, can place a value on their data but do not take steps to back it up. 24% of French SMEs and 9% of UK SMEs fall into this category.
- 6% said that they would go out of business if they lost their data, 30% said that they would suffer substantial financial loss, 25% moderate loss and 14% no loss.
- Lack of time was a major reason for not backing up data.
- Paper backups was another reason given.
- Computer theft was of concern to 53% of UK firms, but corrupt hard disk and accidental deletion were the most common suspected causes of lost data.

### SMEs and their internet sites - State of the eNation Survey 2004

Original report of UK SMEs at [http://www.netimperative.com/2004/12/16/Small\\_firms](http://www.netimperative.com/2004/12/16/Small_firms). But see [www.netbenefit.com](http://www.netbenefit.com) for the website of the organisation sponsoring the survey.

The survey results show:

- SMEs expecting to increase revenue generated by their online activities by 25% over 2005





- SMEs are becoming more dependent on the Internet, although one third still think that the UK is not an environment that encourages small businesses to get online.
- Two thirds receive up to 25% of their revenue online.
- 18% planning to add e-commerce capabilities over 2005.
- SMEs are most concerned about IT fraud and security, with 35% feeling that this may have a negative impact on their business.
- 10% did not have web presence, leading the survey sponsors NetBenefit to predict that up to 100,000 SMEs in the UK do not have web presence.

A tongue in cheek response to this survey can be found in the article "Yet another "survey" shows growth in SME web use" at NowEurope [http://noweurope.com/neties\\_comments.php?id=228\\_0\\_3\\_0\\_C](http://noweurope.com/neties_comments.php?id=228_0_3_0_C)

### **Developing Telematic-based Learning Services - the role of SME Networks.**

A welcome, but older (1995) study that is not so useful for its analytical results but the study teams insight that "SMEs should not be considered as a homogenous mass". A number of research projects have come to the same conclusion. We have to be very careful to not become the SME spokespeople and not to homogenise SMEs into a single classification.

### **Ireland launches e-business strategy for SMEs**

<http://www.eubusiness.com/topics/SMEs/sme.2005-01-06>

A report outlining government action based on SME ICT surveys in Ireland. The report contains interesting snippets of survey data useful for our understanding of SME and e-business strategy.

Main results are:

- Virtually all Irish enterprises have access to computers and the internet.
- The government has concern that they are not deriving the full potential of these technologies.
- ICT is a major competitiveness issue.
- Lack of appreciation by SMEs of the competitiveness issue and lack of time to acquire them are major barriers to SMEs.
- Difficulties in assessing expertise and cost are considered a barrier to SMEs.

### **Small businesses and use of information technology**

<http://www.pneac.org/listserv/printech/1051.html>

This link provides information about a survey undertaken by IBM and the U.S. Chamber of Commerce on small businesses and information technology. We report this survey in more detail because the results provide some interesting insights into SME dynamics. The survey sample was 1010 SMEs. A summary of the results are:

- SMEs appreciate the value of IT, they know technology, believe in it and use it for at least some of their functional needs.



- But they are uncertain about what technologies to buy, where to purchase it, and whom to turn to for help and advice and most are unwilling to take risks.
- 90% reported using technology for accounting, finance, and billing.
- More than 50% use technology for 10 core business functions.
- 96% report owning a PC and 83% report having a modem and a CD-ROM drive.
- Two thirds (67%) have Internet access and a quarter (24%) have a Web site.
- Of those with Internet access, one third (30%) use it to promote their services, one half (49%) use it to find out about potential customers, 63% use it for answers to specific questions, and nearly all (85%) use it for e-mail. While only 25% of all small businesses report being familiar with “e-commerce,” some are already practicing it.
- A third (37%) of those on the Net use it to place orders, 29% use it to receive orders, and 9% use it to pay suppliers.
- 70% of firms using the internet have been on it for fewer than two years.
- 46% believe that websites are worth the time and effort, 37% were uncertain and 17% either didn't know or considered it not worth the time.
- Most small business are cautious about technology – 61% buy after technology has matured, 31% wait for prices to reduce and 54% wait for reports of other users.
- 47% consider themselves pro-technology, 5% expressed concerns about technology.
- 55% view technology as a cost and not an investment.
- 60% express some degree of confusion when purchasing technology.

- 40% buy technology as individual pieces and when needed.
- Most need help when selecting which technologies would be best for their business. 13% rely on consultants, 76% rely on friends.
- Most spend relatively little on technology, averaging \$7,000 per year or 8% of expenditures.

**Potential of critical e-applications for engaging SMEs in e-business: A provider perspective.**

<http://www.palgrave-journals.com/cgi-taf/DynaPage.taf?file=/ejis/journal/v13/n1/full/3000480a.html&filetype=pdf>

This paper is written by David Brown and Nigel Lockett from Lancaster University in the UK. Its primary purpose is to investigate the emergence of and potential for critical e-applications useful for SMEs who need to aggregate their relationships amongst many other organisations and to show that technology can be made available to support them in their trust management and complex e-business transactions.

The paper draws on a considerable amount of survey based research on SME ICT usage. These aspects of the paper will be emphasised in our summary.

The paper contrasts the huge update lower levels of the e-adoption ladder in the UK, but the numbers moving into on-line trading have been significantly below that targeted by the UK government. The paper mentions that other benchmark countries have experienced a similar pattern. The expectation was that large organisational practice would filter to SMEs, but this has only happened in industries such as the automotive industry, where the larger organisations control the supply chain.



The results imply a poor understanding of the dynamics of SME adoption models, in particular, the e-adoption ladder. The paper's thesis is that the traditional adoption analysis has been undertaken from the individual firm, but once the unit of analysis is digressed from the individual firm to the complexity of its trading environment, the traditional adoption models are seen to be too simplistic. The paper illustrates this point with an e-adoption graph by application complexity. Nearly 80% of SMEs had adopted e-mail but they felt very insecure when considering the complexities of e-trading.

### **The Critical Value of ICT for SMEs in the UK: A Critical Literature Review.**

This paper is authored by the College of Estate Management at Reading, UK

[http://www.sbs.gov.uk/content/analytical/research/value\\_of\\_ICT\\_for\\_SMEs\\_UK.pdf](http://www.sbs.gov.uk/content/analytical/research/value_of_ICT_for_SMEs_UK.pdf).

This report was written in 2002 and is therefore a little too old for much value. But the paper does indicate many useful points noted in the Palgrave paper above. The authors are concerned that while the early take up of the internet by SMEs, adoption in subsequent stages in the e-adoption ladder has proven slow. They criticise the adoption model for being too linear, for not recognising infrastructure issues (such as the then slow roll out of broadband) the sample basis and sizes of many surveys claiming to support conclusions about e-adoption. They also criticise studies for not recognising the diversity of nature and culture of SME organisations, and there is a lack of empirical research to support good decisions in this area.

### **Conclusion and further study recommendations**

Given the pessimism of more advanced academic studies into the nature of SMEs engagement with ICT along with still encouraging signs that SMEs are willing investors in ICT provided they can see appropriate benefits, they can afford it, understand it and be able to use and maintain it, then the DBE project can at least view its potential with some degree of confidence. Where the DBE project needs to be very careful is in selecting the right clusters of SMEs to initially engage in the DBE. It would appear as though the regions work in this area is already on-target, since the focus is on clusters of organisations that can benefit from the advantages of working in a more complex eco-system, which needs to be supported by suitable software.

We need to have reservations about early adoption by SMEs. SMEs tend not to invest in high risk projects, particularly as they are known not to invest in consulting costs associated with implementing complex projects. They tend to acquire their technology piece meal, adopt by word of mouth and rely on the expertise of friends to keep their technology going. The DBE is certainly within the bounds of emerging software relying on some evolving and emerging standards. While we can protect the SME consumer from the complexity here (something we cannot do for the SME software house) we cannot insulate the SME from the risks. As Dada Gardner of the Aberdeen Group put it with respect to web services: *"I don't think it's too soon to step into the waters, but I think it's important to realize that these standards are fresh, not*



*fully cooked and there are needs for more standards. You have to try to be careful not to get too far into the technology. Web services are something you should try out and use in pilots inside the firewall. But when it comes to mission critical activities, particularly those outside the corporate boundaries, it's not ideal. It's too soon to look beyond the firewall except if it's something that couldn't make or break your business"*<sup>3</sup>.

Well, this statement was made in March 2002, and times have moved on. But the mood is typical for SMEs many of whom will look at technologies such as web services in just this way.

The warning should make us careful about the selection of applications we initially place onto the DBE. It is our belief that applications will need to engage with considerable amounts of business complexity if it is to move above simple one to one trading. So the less ambitious starting point for DBE services suggested by many members of the consortium may in fact be a very wise way to start.

But we should also treat all the survey results with care. The sample of samples is not high and the quality of the original research very difficult to ascertain. With such small sample sizes and potential biases within the underlying study models (particularly the one that suggests that SMEs will in some respect, follow the trends of the larger organisations) we should test the waters ourselves taking care to recognise opportunities for our earlier adopter SMEs and take care to minimise their risks.

The final point we make in summarising technology adoption, is that most SMEs cannot invest in complex infrastructure. The

DBE model is well suited for low risk investment in technology hardware, particularly as broadband connection is becoming more widespread and affordable.

This study is a first look at the literature on studies and surveys. It covers many aspects of SME perspectives on technology and their adoption of it. Are there any particular areas of the research findings summarised in this paper we should take further? For example, do we need to understand more mature and field tested adoption theories to try to understand or predict adoption behaviour within the DBE? Should the DBE project look at non English written studies? Should we be more aware of the current spending mood of SMEs and their current attitudes toward ICT take-up? Do we need better insight into the application packages they are currently deploying? Whether they are open to integrate or electronically trade. Most of the opening questions remain to be answered, even though we have a greater insight into their probable direction. Should the DBE invest in paying for some more detailed, but carefully selected studies?

The Market Watch team invite our readers to make suggestions on areas that you would like further research in this subject. We are convinced that the more we understand the dynamics of our ultimate clients, the more likely the DBE is to succeed.

<sup>3</sup> <http://www.internetnews.com>, March 13, 2002, "Web Services, Moving Beyond the Hype"



## Appendix I References

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