Points of view

SME e-business and supplier-customer relations

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Abstract

This article starts with definitions of e-business and a summary of what it means for businesses. This is followed by a quick description of a model of e-business adoption. It then argues that modelling has reached a secure enough state for us to be able to predict benefits of adoption with some certainty and to determine a cost-effective way forward for most smaller businesses. It then reviews briefly some evidence about adoption and interprets this in the light of the previous arguments. This article is very definitely an opinion article. It is not based on a comprehensive research programme. Rather, it is based on an interpretation of the masses of private and confidential evidence that flow in the veins of IBM, to which the author has access. It is skewed towards how e-business affects the relationships between companies and their customers.

Introduction

Academics and commentators who have been around long enough to experience different waves of managerial innovation cannot but be impressed with the progress of e-business in companies of all sizes. For despite the warnings of Jeremiahs that progress with e-business in this or that sector or country or in companies of different sizes, there is little doubt that the use of e-business in its various forms is at least as pervasive as one would expect given its relatively early stage of development and the still rapid evolution of e-business technology. This article argues that we now know enough about the benefits of different types of e-business for most small businesses to be able to determine with some certainty which aspects of e-business it should take-up, when and even which products and suppliers it should choose. It argues that worries about speed of take up of e-business in smaller businesses are exaggerated and that we are just witnessing a normal innovation diffusion curve, in which the time-lag between early adopters and laggards is 20 years or more. However, it also argues that research diagnosis of advance is relatively unsophisticated and needs to move ahead to keep up with technological advance.

This article starts with definitions of e-business and a summary of what it means for businesses. This is followed by a quick description of a model of e-business adoption. It then argues that modelling has reached a secure enough state for us to be able to predict benefits of adoption with some certainty and to determine a cost-effective way forward for most smaller businesses. It then reviews briefly some evidence about adoption and interprets this in the light of the previous arguments.

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Definition of e-business

There are many definitions of e-business. In IBM, we often use the definition of Lou Gerstner, former CEO of IBM:

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E-business is a fundamental way in the way that business will be done – aided, abetted, supported, and enabled by technology.

E-business is not just the World Wide Web. E-business involves e-business technologies (e.g. intranets, portals, content management, middleware, mobile) to enhance profitability by:
- transforming business processes to compete in new, faster, better ways including via multi-channels;
- changing traditional business models;
- allowing companies to enter into and exit from markets much faster and at much lower cost;
- allowing companies to serve their customers through many different channels, co-ordinated where appropriate;
- creating new brand experiences for customers, suppliers and business partners;
- optimising interactions with all stakeholders – customers, suppliers, business partners, staff; and
- creating, developing and using knowledge to win more business, to change the nature of business won, and to increase efficiency and reduce risk.

Not so long ago, there was a reasonably clear distinction between e-business and other aspects of information technology. Today, so many information technology applications use Internet or closely related technology somewhere or other that the distinction is fuzzy and possibly even unhelpful. It is almost as if we have witnessed a rebirth of the purpose of information technology. The smaller the enterprise, the more likely this is to be true. This is because the ways of accessing so many applications and interfacing between them which were previously proprietary (and therefore usually very expensive) are now frequently browser-based (and so normally cheaper). The smaller the business, the more likely it is to need to use inter-organisational systems, the very area where Internet technology has had its greatest effect.

It is also definitely true that in its new e-business guise, information technology and all who work in it are much more comfortable with the language of business. Today, the focus of information technology discussion,

for large and small businesses alike, is as likely to be on topics such as:
- cost reduction;
- operational resilience;
- risk reduction;
- financial control;
- business monitoring, measurement and control;
- forecasting;
- business process outsourcing;
- business transformation;
- customer relationship management;
- enterprise resource planning;
- supply chain management;
- process re-engineering;
- straight through processing;
- content management;
- knowledge management;
- document management and archiving; and
- education and training;

. . . as on topics such as:
- servers;
- databases;
- data warehousing;
- data mining;
- data communications;
- middleware;
- systems integration; and
- voice and data integration.

However, the benefits of IT investment, particularly in and the use of e-business technology, are still likely to arise in areas such as the ability to handle greater volumes of transaction or cases, of increased complexity, at higher speeds, with greater efficiency, quality and transparency, in ways that are more trackable and measurable, with less risk, and increasingly between as well as within companies.

How e-business changes supplier-customer relationships

E-business changes a business's interactions with customers in many ways:
- *New distribution channels.* For example, new distribution channels are created through the use of pervasive technologies – technologies that allow customers to be reached anywhere, from anywhere. E-business also facilitates

disintermediation, bypassing existing agency and intermediary networks, and has the power to disrupt existing value chains.

- *New markets.* Once a brand has established a significant on-line following, new markets can be reached, and others can be created.
- *New business models.* E-business enables direct and simultaneous interaction between all parties in the value chain – buyers, sellers, information providers, regulators, etc. This has the potential to create disruptive business models such as e-marketplace.
- *Transparent marketplace.* In its ultimate incarnation, the World Wide Web offers unlimited information about an unlimited number of products and services to the entire population of the world. Where this is applied to virtual or information-intense products, the entire value chain can become transparent to all its members. Buyers can have access to real time information on current prices, interest rates, and commission charges and can at any time select the most advantageous deal. In a transparent market, only the fittest will survive: only those suppliers with the most responsive products and service coupled with the lowest cost bases will be able to compete.
- *E-CRM.* Electronic interactions with customers are by nature 100 per cent computer-recorded. Every customer action can be tracked, yielding far more information about customers than was available in the past. Coupled with the "deep computing" capabilities of modern technology, individuals can be analysed and targeted on a one-to-one basis in a way never possible hitherto. Given that the "transparent marketplace" is some way off, in the meantime e-CRM offers a powerful means of attracting and retaining customers.
- *Reduced costs and improved service.* Last but by no means least, e-business facilitates lower prices by reducing operational costs, whilst enabling better customer service, and product flexibility through business optimisation. E-business has a major impact not just at the point of customer sales and service, as

commonly understood. Many processes can be made much more effective and efficient through e-automation, knowledge management and self-service.

Note that in large companies, e-business often helps to overcome the disadvantages of size, allowing companies to reap advantages. So many applications are focused on internal transactions and communication. For smaller companies, a much higher proportion of e-business applications relate to their dealings with outside parties – customers, suppliers, business partners and the like. Internal communication is less problematic simply because there are fewer people inside. One of the traditional problems for smaller companies is the cost of setting up new applications. These have fallen greatly in the last few years as larger software companies have used Web technology to make quite complex applications available to small companies with very low set up costs.

Critical success factors in e-business

The critical success factors in exploiting e-business to enhance customer management include:

- *Value proposition.* The products and services offered must add up to a truly compelling value proposition for the target audience.
- *Trusted brand.* Interacting with a computer can be highly impersonal, so effort must be invested into creating an experience for customers that encourages trust.
- *Multi-channel customer management.* In many industries, customers expect consistent sales and services over all channels, both physical and virtual.
- *Web site quality.* There are many aspects of quality in Web sites, for example usability, "stickiness", resilience, security, continuity of service. All must be of a high standard if the e-business value proposition is to be a well received in practice.
- *Culture/language/geography.* Despite the global nature of the World Wide Web, the reality is that geography and ethnicity create huge differences in culture and of course language. Successful e-businesses

recognize that different Web sites are required for different audiences.

Modelling stages of evolution of e-business states

IBM uses a particular model of e-business evolution. This is not of course the only possible model. However, because it is used by the world's largest information systems and services company, it has the advantage of being backed by an extensive database of practice, including criteria and scoring, and case studies. This means that we can see what the current state of play is with great accuracy, and also assess any company – whatever its size – against similar companies.

We define six "Internet states". Businesses move from state to state according to their organization's needs or goals, so note that it is not necessarily right for a particular company to move to more advanced states as soon as possible. In larger companies it is normal to find different business units in very different Internet states. It is not uncommon to find large companies with an advanced, successful Internet-only arm, but where many of its employees do not even have access to an intranet.

Internet states

The six states may be summarized as follows. Each state assumes the existence of all of the previous ones:
(1) *Access.* Some people or everyone has access to the Internet, usually just for e-mail. A very simple Web site may be maintained.
(2) *Publish.* A "static" multi-page Web site for information purposes only.
(3) *Transact.* Web site supports one or two-way transactions with the end user, but does support fully integrated processing of transactions.
(4) *Integrate internally.* Use of e-business to transform internal organization and processes, radically reducing costs and optimizing the business.
(5) *Integrate externally.* Use of e-business to create a seamless, transparent process across the entire value chain, from

customer through intermediary through all supplier tiers.
(6) *Adapt dynamically.* Use of Internet technologies as the foundation for operating in a digital, virtual community. For example, a fully e-integrated institution can seamlessly in-source or out-source processing functions as demanded by market conditions and changing company structures.

These are summarised in three main stages, as shown in Figure 1.

The main determinants of the need for continued investment and movement between states are usually organizational capabilities, rather than technical capabilities. Let us consider the model in more detail.

Early stage
The e-business journey often begins with simple initiatives that extend market reach. This involves experimentation. Network capabilities and technologies are used to interact and transact with customers, suppliers, partners and employees.

Access
Employees communicate via e-mail, and a single, static home page provides contact information. The approach is straightforward and low cost, but employees may not have all the required skills. However, for most companies, the Web is now essential. It gives staff an easy way to search for ideas as well as a way to communicate with customers, suppliers and colleagues.
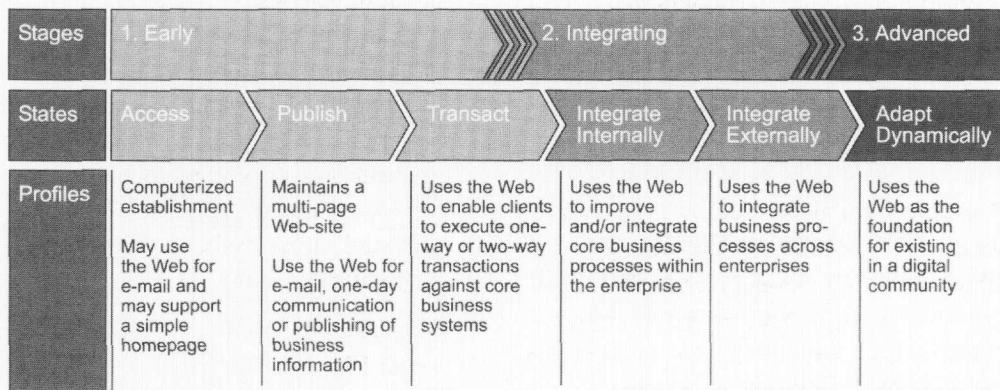
Publish
A multi-page Web is used to communicate with prospects and customers. Much valuable information is provided through the Web site, but resulting interactions are handled by phone, fax or e-mail. The approach is still straightforward and low cost, but value is hard to quantify. However, even this approach helps the company reach new markets, often at very low cost.

Transact
Customers, suppliers and/or employees carry out transactions on-line. Existing stand-alone applications are adapted with a browser interface. In larger companies, there may be several different initiatives – the finance department has one for credit control, the sales department one for prospecting,

Figure 1 The IBM model of stages and states of e-business

Stages	1. Early			2. Integrating		3. Advanced
States	Access	Publish	Transact	Integrate Internally	Integrate Externally	Adapt Dynamically
Profiles	Computerized establishment May use the Web for e-mail and may support a simple homepage	Maintains a multi-page Web-site Use the Web for e-mail, one-day communication or publishing of business information	Uses the Web to enable clients to execute one-way or two-way transactions against core business systems	Uses the Web to improve and/or integrate core business processes within the enterprise	Uses the Web to integrate business processes across enterprises	Uses the Web as the foundation for existing in a digital community

customer service for managing queries, complaints and service calls, human resources has one for employees, and the buying department one for suppliers. In smaller companies, individual managers may opt for particular packages optimised to their need. Each function thereby improves its efficiency and quality. However, fears about feasibility, return on investment, security, and privacy start to occur.

Integrating stage

Internal integration

Here, the volume and complexity of customer, supplier, partner and employee transactions handled via the Internet site increase. The company needs a reliable, scalable e-business infrastructure that supports e-commerce and supply chain management and customer relationship management initiatives by integrating disparate applications and data inside and outside the organization. Most companies streamline their own operations first, linking their internal systems before turning their attention to integrating their systems with those of their partners, suppliers or customers. Here, the main problem is lack of critical integration skills. However, if these can be overcome, integrating processes enterprise-wide leads to increased productivity, streamlined operations, reduced costs and better customer service.

External integration

Business processes are transformed to integrate customers, suppliers and partners in a consistent application environment, whether Internet-, intranet- or extranet-based. Examples include supply chains integrated across organizations and collaborative product development systems. SMEs are often involved in this process. A large customer insisting on Web-based collaboration can be the trigger for rapid e-enablement in a small company. Even small companies can use this approach themselves to shed or manage more cost-effectively some of their functions. Integration with external partners involves a cultural shift that many companies find hard, due to fear of lock-in or of a shift in the balance of power in the relationship. In cases where one or more parties to the co-operation are "mobile" (e.g. with calling sales or service people, or involved in the logistics business), this stage involves extensive use of wireless and pervasive computing technology. In less developed countries, where telecommunications infrastructures are often weak and where wireless technology is helping countries "skip a stage", wireless may be a necessity, not a luxury.

Advanced stage

Here, a company re-examines its business model to determine which functions are essential to its value proposition. Support functions, such as human resources, accounting, information technology, and perhaps even sales and marketing, are outsourced to increase efficiency and reduce costs. The Internet is used as the computing platform for transactions and interactions, to create a fluid environment where suppliers, partners, customers and employees come together in new ways, integrating business processes and sharing knowledge within and across organizational boundaries.

Adapt dynamically
Here, business processes which have been integrated using software and systems infrastructure, are dynamically assembled as needed to address a specific problem or business opportunity – without the intervention of information technology staff. This new business model, called a "business Web", allows companies to respond quickly to changing customer needs and market conditions. Although few companies have reached this stage, those who have show that great competitive advantage can be achieved by narrowing their focus to their core competencies – complementing them with a network of outside specialists connected through the Internet. However, security, privacy, skills and technology issues, as well as legal, governmental and regulatory considerations, must be addressed. Standards are critical to success at this stage.

In its most advanced form, companies have so focused their businesses that they can provide their products and services on demand, because their processes and systems are fully linked with customers and suppliers and able to respond to individual customer needs automatically. This has been by achieved by very few companies, but has been a target ever since we were introduced to the concept of "just in time".

Is the cycle hype?

Stages models have come in for some criticism because they can so easily be used to "hype" clients into thinking that they need to move quickly to the next stage. That is why it is important to support any such stages model with a scorecard that shows what progress companies have actually made. Like other reputable suppliers, IBM uses a profiling tool to help identify quickly in which stage a company is and what benefits it might get from movement to the next stage. The industry/geographic data used for the comparisons, come from two main sources:

(1) IBM conducts considerable research in the marketplace and summary data from this research are used to feed the profiler database. This applies, for example, to financial benchmarks.

(2) Each time a sales representative uses the profiler, the industry, geographic, enterprise size and stage of adoption data are used to update the profiler database.

The process is also used by IBM business partners, many of whom are IBM's channels to smaller business markets.

The factors probed by the tool are listed below. Note that the earlier ones are very basic:

- Access to the Internet or World Wide Web?
- Ability of employees to e-mail individuals externally.
- Access to a business intranet.
- Whether the company maintain one or more business extranets (private networks using Internet technology, set up for selected business partners).
- Maintenance of a Web site with multiple pages.
- Whether users can fill out interactive forms to register or update information on the site.
- Whether the company's Web site uses cookies, Internet passports, or Web tracking to target and/or track visitors.
- Whether push technology is used, e.g. to enable the company to deliver customized information to users automatically, either for a fee or for free.
- Whether the company's Internet site, intranet and/or extranet offer customers, employees, or vendors the ability to conduct secure financial transactions.
- Whether the company's network system is used for supply chain management by keeping track of orders and/or managing the flow of information between the company and its suppliers.
- Whether the company's supply chain management application allows automating activities across different units within the business.
- Whether the company's supply chain management application allows automating activities with one or more of the company' suppliers or customers.
- Whether the company's network system is used for work flow management.
- Whether the company's network system is used for customer relationship management or customer service by

offering on-line support, information or self-service data to customers to clients.
- Whether the company's network system is used for enterprise resource planning by automating linkages between at least two back office functions.
- Whether the company's network system is used to support automated network based connections between two or more of its internal core business processes or functions, allowing transactions to be initiated and completed without manual intervention.
- Whether the company's network system is used for automated network-based connections between one or more of the company's main business processes or functions and the related business processes or functions of its suppliers, business customers and/or channel partners, allowing transactions to be initiated and completed without manual intervention.
- Whether the company's network system is used for Web-based collaboration with its business partners.
- Whether the business participates in an e-market, i.e. a Web-based market for the exchange of goods and services between businesses.
- Whether any e-market participation includes automated buying and selling decisions, such as automated offer, bid, purchase and/or sale of goods or services.
- Whether the company's network system is used to acquire or provide business or information technology services in a dynamic, automated, real-time manner: that is, where the nature and amount of service needed is identified, requested, and committed automatically.

As we have shown in other areas (e.g. CRM) (Stone et al., 2002), having deep knowledge of where large numbers of companies are and how they move ahead ensures that we know how companies can and should advance through using e-business techniques and what benefits they get. We know that very few companies are in the most advanced stage (as much third party research demonstrates) for example, Daniel et al. (2002), but many are well into the external integration stage, with

many SMEs experiencing it through their relationship with large business customers. However, the coherent, focused nature of many smaller businesses and the availability of most of the technology and services either as a low cost package or as a Web-based, outsourced model means that the cost barrier for this stage has been removed. The issue is therefore now mainly one of management competence and of quality and stability of relationships with business partners, suppliers and customers.

The state of SME e-business adoption

There have been so many reports on this that it would be a waste of readers' time to summarise it all. Broadly speaking, all the research we at IBM have seen shows that the number of smaller businesses with their own multi-page Web sites, and even able to transact on them, has reached a healthy proportion in most developed and many developing countries, and those that have invested in e-commerce are on average getting good financial returns from it. The leaders – often stimulated by their relationships with large business partners – are moving onto the integration stage.

However, many of the published research studies on e-business diffusion are using criteria strongly associated with the early stages of e-business. Yet prediction of the rate of diffusion of e-business requires much better understanding of which companies are at the later stages and what problems they are experiencing. Many studies are seemingly designed to track the trailing edge or laggards, not the innovators and fast followers. Individual indicators, such as the number of businesses doing any trading on-line, are seized upon as if they are critical indicators of the progress of e-business. By themselves, they are not. Indeed, with the number of very large businesses whose on-line trading operations ended in bankruptcy or nearly so, seizing on these "hype" type indicators is particularly dangerous. A much more balanced approach is required. A similar cycle of hype and disillusion seems to have taken place in the area of customer relationship management. Yet here we have shown that a properly defined and score-carded approach can show very clearly what the exact state of

play is, what problems companies are having and how they can improve their business and financial performance (Stone *et al.*, 2002). This approach has shown that, just as with e-business, investment in technology alone is not a recipe for success. Failure to deal with management issues (strategy, process, people, etc.) leads to much lower returns on IT investment.

Successful diffusion of a new approach to management takes time. As we know from the very earliest studies of innovation, success depends strongly on how familiar the different participants in the network of firms, supplier, partners and customers are with the technology, as well as their ability to deal with the management issues involved (Rogers, 1983). For example, a study of the diffusion of e-business in consumer goods marketing (where many of the suppliers involved are small agencies) identified many following different diffusion processes at work (see Figure 2) (Stone *et al.*, 2002). We must also remember that many of the next generation of entrepreneurs will have grown up in a consumers' e-world. Here, the statistics showing the number people using

e-business technology to manage many aspects of their lives (whether playing multi-player Web-based games or using text messaging to take part in television competition or to lobby governments) confound even the most optimistic experts (Lindstrom *et al.*, 2003). Perhaps we can hope that they too will find existing measures of progress and their related aspirations rather basic, even frustrating.

Conclusion

The technology that supports e-business continues to evolve rapidly, as do the strategies of its suppliers. It is now possible for a small business to e-enable itself – emulating even the most advanced large businesses – relatively quickly and cheaply, using various degrees of outsourcing. The barriers to change are no longer technological – they are now barriers of competence and will. The risk for countries and companies that see themselves falling behind in the "race for e-enablement" is that they see it as a technological, not a

Figure 2 Diffusion processes taking place within the diffusion of the Internet in branded consumer goods products
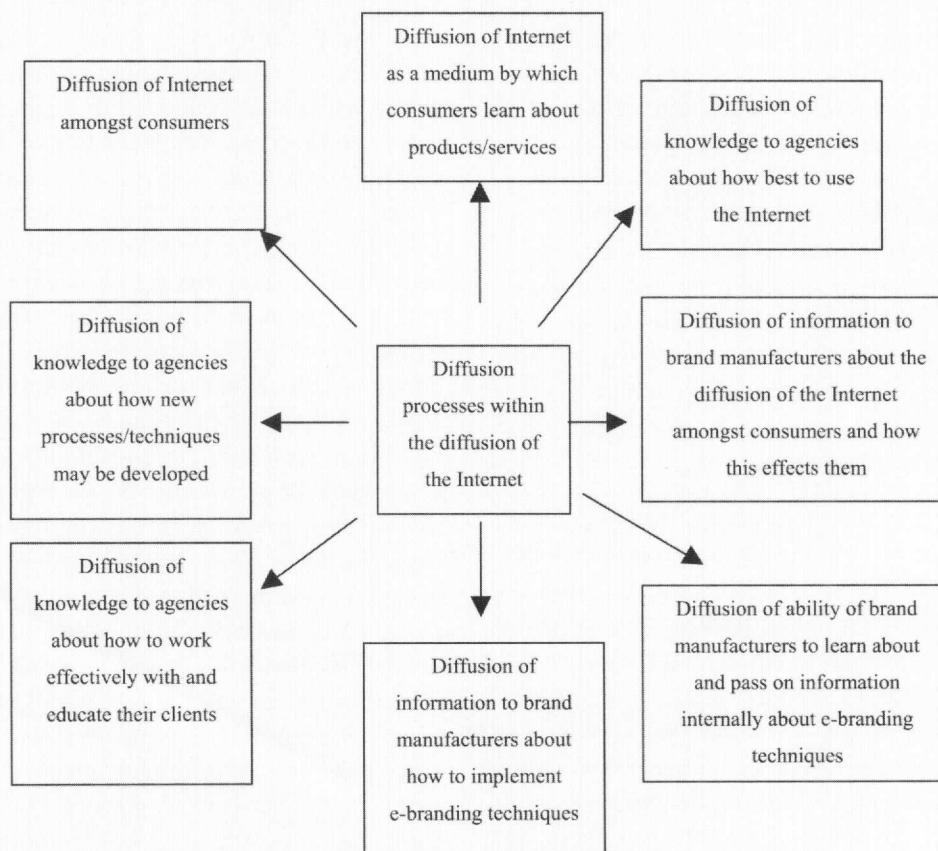
managerial, race. It is a managerial race because in its ultimate form it involves some degree of transformation of the enterprise and how it works with the world, and of its products and services. In some countries, we could argue that government is trying, in its arcane way, to teach us this lesson by spectacular failure, because where e-government fails it is through focusing just on Web-enabling the front end of citizen access, not re-evaluating how government should serve the needs of its citizen-customers. Fortunately, the forces of competition prevent small businesses making that serious mistake.

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