

There's no business like e-business

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Abstract

Seeks to address directly two assumptions that are inherent in current discussions concerning business and the role of technology. First, that business intelligence is, in fact, a feature of the business rather than the staff within that business. Businesses are simply entities with assets and capabilities but no cognitive processes, intelligence is a unique property of humans. Therefore there is a greater need to understand the social processes concerned in order to recognise this resource effectively. Second, that "e-business" is distinct from "business". Uses original research in the area of technological innovation as the basis for developing a wider argument with respect to e-business. Argues that what is currently referred to as e-business is a relatively poorly developed bundle of technologies that have yet to achieve full application in order to deliver optimum benefit. Also discusses the e-business phenomenon, the role of technology and the importance of a social perspective of business to give more insightful understanding of the interactions between these areas.

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A paradigmatic perspective

The use of the term e-business implies that it is distinct from business *per se*. There have been arguments proposed that would suggest that the underpinnings of e-business are of such significance that it can be regarded as discontinuously different. If this is so, then it could be argued that a new business paradigm has emerged.

Kuhn (1970) first defined the term paradigm within the context of the natural sciences. Kuhn notes that the contrast between the current and new paradigm is so great that it can be regarded as revolutionary. He clearly uses the term within the context of scientific practice and notes two characteristics of a paradigm. First, that the new circumstances are unprecedented, sufficient to engender interest distinct from previous bodies of knowledge. Second, that it poses an agenda of problems and research to be addressed. This is underpinned by a common commitment to research practice resulting in a research tradition.

The term paradigm has now become a regular part of jargon-laden, everyday business language. However further study of his work shows that he also proposes that a historiographic perspective is adopted and that the relationships between paradigms are viewed not from the remote position of hindsight, but by considering the relationship between paradigms within their historical context. It is this deeper understanding that assists in looking beyond observation and experience and to enter the scientist's world of values and beliefs. The nature of science is such that, certainly in the major sciences, the universal laws and truths that result from scientific study are both rigorous and rigid and become entrenched by education and, eventually, the unquestioned acceptance by the community.

Therefore a paradigm shift, in the sense that Kuhn originally defined the term, implied a fundamental change not just in the practice of science but in the underlying values and beliefs. We summarise this by referring, for example, to a "Copernican" or "Newtonian" shift. Perhaps we should stop and ask ourselves if the ill-defined distinctions between "e-business" and "business" conform to this higher order definition of a paradigm that Kuhn discusses? It is unlikely that we can identify e-business heroes of the



stature of Copernicus or Newton, whose work impacted not just the domain of science, but religion as well for example.

The recent reversal of fortunes of the dot.com businesses has graphically emphasised the fact that they, and e-business, operate within the same business environment and context as conventional bricks and mortar businesses (Porter, 2001). However, fundamental to this is the technology that has enabled the e-business phenomenon to take place.

This paper goes on to discuss some of the issues associated with technology understood from the basis of qualitative research methodology, and applies this learning to the e-business phenomenon. The paper concludes by a social perspective of the phenomenon and develops guidelines for managerial practice.

The role of technology

In modern-day society technology is ubiquitous, so much so that the benefits it delivers are commonplace and taken for granted. Everyday we experience running water, the telephone, the motor car and many other technology enabled facilities that were at one time unimaginable. However, it is not the technology as such that delivers these benefits, it is the application of that technology resulting in a product (Phillips, 2001). Hence a technology requires an application to turn it from an invention and into a product.

Building on previous and current streams of research (Millier, 1993; Palmer, 2001), a series of depth interviews, focus groups and case studies were conducted. The respondents were middle/senior level managers working in technologically based business to business organisations. In particular the study was interested to consider the interaction of different disciplines within the organisation and how this contributed to the new product development process and the implications for the marketing of technologically based products (Millier and Palmer, 2000, 2001). The findings of this research are applied to an analysis of the e-business phenomenon.

These studies found that the failure to understand these processes can result in the “myth of the big market”, where a new

technology is seen as being revolutionary in its potential. However, as Millier and Palmer (2000) discuss, this apparent potential is often largely illusory. A new technology may have interesting features but perhaps no benefits, it is a device rather than a product. The innovation process develops applications for the technology and in this way the market size and hence potential becomes much more tightly defined (Cooper, 1993; Millier and Palmer, 2001).

Confusion between what a technology is and what it does can result in a perception of unrealistically high potential. This can be further exaggerated by a lack of market based realism. The ubiquity of the potential applications for the technology serves to heighten further the expectations of the eventual delivery of benefits. Perhaps the magnitude of the potential applications is seen to be so great that they may be regarded as revolutionary. This is sometimes the claim made for e-business, and whilst the potential for technology enabled relationships within and between businesses is apparent, there is no change in underlying beliefs and values that would justify e-business being classed as a paradigm shift.

Phillips (2001) explains that the application of technology can be considered in four ways (see Figure 1), which represent a gradation of change from evolutionary to revolutionary. He estimates the percentage of operational improvements in each category:

- The application of technology to improve the efficiency of current operations (72 per cent).
- The application of current technology to undertake new operations (18 per cent).

Figure 1 Operational improvements by the application of technology

Current operations	1	3
New operations	2	4
	Current technology	New technology

- The application of new technology to improve the efficiency of current operations (8 per cent).
- The use of new technology to undertake new operations (2 per cent).

His analysis suggests that most of the applications will be made in box 1 of the matrix, representing incremental improvement of current business activities.

In the context of e-business the business to consumer sector (B2C) can be considered as secondary to the potential within the business to business (B2B) sector. For example one of the largest supermarket businesses in Europe, Tesco, also has the largest B2C e-business in Europe and one of the few profitable ones. However, despite this the revenue from this business is only approximately £300 million, from a total turnover of £23 billion.

The opportunity to link B2B network members and co-ordinate their activities by the quicker and more effective transmission of information relating to stock, order administration etc. has considerable potential for cost saving and service improvement (Brewton and Kingspeed, 2001). The often quoted example of Wal-Mart and Procter & Gamble suggests that early and more immediate benefit can be gained by working through and interconnecting the supply chain (Christopher, 1998). Again Tesco offer a further example with their leadership in this context using TIES (Tesco information exchange system) to link with their suppliers (*Financial Times*, 1999). The company also leads a forum of retailers with the aim of standardising systems used by retailers and their suppliers.

Whilst the introduction of standards can aid the adoption of new technologies and is of obvious importance with IT based products, paradoxically it can also slow the rate of future innovation (Phillips, 2001). Once a new standard has emerged then mental, financial and organisational commitment exists providing reasons not to innovate further. In addition both the apparent and real risk of technological innovation becomes more tangible. This is not unfounded as risk reduction, rather than the size of the opportunity for application, is a preferred aim with respect to technological innovation (Millier and Palmer, 2001). Hence new technology, rather than ongoing upgrades and

improvements, could be perceived as even less desirable.

This suggests that new technology rather than offering optimistic potential can be seen as a downside risk. Millier and Palmer (2001) suggest that this is the area in which the organisation has least knowledge, and therefore runs the risk of exposure to unknown and unknowable problems. Christensen (1997) has identified the disruptive nature of some types of innovation and the consequent risk that attaches to them. The management of such technological innovation may require such a range of skills and capabilities on behalf of the organisation that it may be enabled in the context of its current technology, but disabled with respect to the disruptive technology. Whilst the new technology may therefore allow the organisation involved to consider entering box 4 in Figure 1, the company lacks competence and risk is high.

For these reasons it is proposed that the role of technology is largely to “e-enable” the current activities of the firm, and in particular to seek efficiency improvements (Dutta and Biren, 2001). This represents the easiest and lowest risk approach to technological innovation, together with a good fit to organisational assets and capabilities and is consistent with current beliefs and values. It is only in exceptional circumstances that e-business can be considered as distinctly different from conventional business and to genuinely represent a new paradigm. The success of “clicks and mortar” firms and the convergence of e-businesses with conventional bricks and mortar enterprises (e.g. Amazon.com with Waterstones and Virgin Wine) demonstrates a shared business paradigm (Palmer, 2002).

Society and change

Francis Bacon, a philosopher of science, proposed that the three most important inventions were gunpowder, the magnetic compass and printing (*The Economist*, 1999). Other technological innovations such as the steam engine, sanitation, electric light and power, oral contraception etc. also in their turn created significant changes in society. It is perhaps too early to place information technology within a historical context, but this degree of perspective should at least raise in our minds the question as to whether or not

the information revolution, from a social perspective, is as dramatic as we might imagine.

It is commonplace for us to comment on the rapid pace of change, the rate of technological innovation and the extraordinary pressures that this places on managers as they work in a 24/7 environment. Yet if we adopt the historical perspective advocated by Kuhn we may reflect that the pace of change may be of no greater magnitude than that experienced by previous generations.

For example, the UK was the first economy to become industrialised. This was facilitated by government sanctioned structural changes to agriculture that enabled a switch from subsistence to cash farming. In the process this disenfranchised a large number of country dwellers who lost both their means of support and assets. Alongside this was the rapid industrial development of the manufacturing towns of central and northern England that attracted the newly available labour. Cities grew disproportionately, with the population fed by an efficient and technologically innovative agricultural industry (Strong, 1998).

Despite the provision of employment the law of supply and demand operated brutally in the labour market, eventually resulting in social reform with the introduction of social support, the “poor laws”, in the first half of the nineteenth century. The application of technology to both agriculture and industry in the period from the early eighteenth to the mid-nineteenth century created social change arguably of much greater magnitude than that experienced before or since.

By contrast with other waves of new technology, IT has a number of distinctive features that make its potential to influence social change very significant. These features include:

- *Ubiquitous application.* Information technology can be applied in many different ways by users irrespective of the type of business or role they perform. An e-mail system, access to the Internet and data processing capability is just as relevant for a hospital as for a component manufacturer. In fact it is highly likely that they use similar hardware and software and could communicate and exchange data quickly and easily should they need to.

- *Dramatic rate of cost decline.* The price of processing power, data storage and transmission has fallen from thousands of dollars per unit to a few cents. A “Furby” child’s toy contains more processing power than was used on the Apollo space programme.
- *Universal ownership.* The increasing utility and ever lower cost of hardware and software means that they are now almost universally adopted. However the availability of bandwidth to enable rapid communication and transmission of data remains problematic in many countries and is therefore a block to further development.
- *Exponential growth.* Continuous, rapid development and innovation means that the trends to cost reduction and capacity increase continue. The first semaphore style telegraph, using movable arms, had a capacity of 0.2bits per second. Fibre optic cable has a capacity of more than 10 billion bits per second. With surplus capacity in recently installed fibre optic networks apparent, due to recent further technology gains, this in turn is likely to stimulate more developments.

All of these factors suggest that the pace of change is going to at least be maintained and almost certainly increase due to endogenous growth. The world of leisure envisaged by the former British prime minister Harold Wilson, when discussing the implications of technology in 1963, seems a distant aspiration. The promise of the paperless office an oxymoronic joke. If gaining an historical understanding of the context of change in society in the Kuhnian sense is difficult or perhaps impossible to conceive, then envisioning the future is likely to be even more imprecise.

Why is it important to understand the social and personal context of change? As has been suggested earlier, the major opportunity for the application of information technology – e-business – is in improving the efficiency of current business activities and to extend the management of information from within the organisation through the supply chain. This requires the development and management of relationships (Palmer, 2001). Such relationships need to be managed and maintained at a number of different levels:

- *Industry.* It is important that a company along with its competitors is engaged with the legal, social and political framework within which it operates.
- *Business.* Within a business to business context the company can be seen as the brand, and maintenance of reputation is an important contributor to credibility, trust and commitment.
- *Product.* The product represents the focus of the exchange, consistent and reliable supplies of appropriate quality are fundamental.
- *Personal.* It is not businesses that buy from each other, it is people. Appropriately motivated, committed people capable of developing empathetic and supportive relationships with customers play a vital part in the overall relationship.

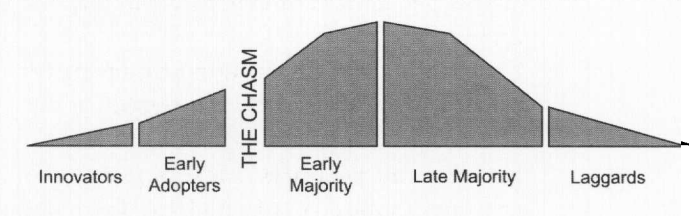
The tendency of the IT specialist to, on occasions, refer to the people interacting with the hardware and software as “wetware” suggests that the social implications are not fully acknowledged, although the relevance of such social issues with respect to relationships is well understood (Iacobucci, 1996). If the speed with which change can be achieved is a source of competitive advantage (Quinn, 1993) then the rate of technological adoption will be influenced by the way in which it is understood and accepted by the staff concerned and their willingness and capacity to accept change.

Understanding technologically driven change

The concept of diffusion of innovation has been applied to the high technology sector. Generically this framework consists of a bell shaped curve divided into five distinct parts: (1) innovators; (2) early adopters; (3) early majority; (4) late majority; and (5) laggards (see Figure 2).

Moore (1991) emphasises the importance of moving from the early adopter to early majority stage as the product moves from being technically interesting to an application of choice and eventually establishing itself as the standard in the market place. Once a standard emerges then there are strong

Figure 2 Diffusion of innovation



reasons for others in the market to purchase similar products.

Moore asserts that the key to the mass market is to develop an appropriate application for the technology, enabling it to “cross the chasm” and develop market dominance as the accepted standard.

Moore also noted that whilst applications are more appropriate to narrow, vertical markets, platforms provide greater opportunities for horizontal application across many markets spanning many niches. The more widely the standard is adopted the more compelling is the reason for new users to adopt it, and for established users to remain loyal. Products such as the “Word” program being used to prepare this document or the ubiquitous “Palm pilot” represent horizontal platforms, for example.

For e-business to become ubiquitous, and in particular to facilitate B2B relationships through the supply chain, then common platforms readily accepted by purchasers are necessary. The TIES/Tesco example earlier represents an effort to achieve this but it is proposed that many more organisations are still at the earliest stages of the diffusion process, as represented by the comments of a senior executive of a FTSE 100 company (and who will therefore remain anonymous):

We've wasted a ton of money on e-business. Where has it taken us? – Nowhere (Senior executive, world class manufacturing organisation, 7 November 2001).

He then went on to say that he envisaged the major opportunities as being cost reduction rather than value enhancement, suggesting that the main focus would lie in box 1 of Figure 1, incremental efficiency improvements to current business operations.

This would suggest that the technology needs to develop considerably in order to achieve application and/or platform status, and in a B2B context to enable operational efficiency to be improved by the greater sharing of information and consequent improvement in efficiency.

The social context of technologically driven change

The significance of values and beliefs has already been mentioned with respect to the discussions concerning the concept of the paradigm. Rogers (1983) first proposed the concept of diffusion of innovation. He noted a number of important attributes with respect to innovation: the innovation itself, whereby a technology is applied to provide purpose and use; the importance of communication and the fact that this takes place over time within a social system. And then using examples drawn from the field of sociology he comments particularly on the importance of being client-oriented rather than innovation-oriented. In order for the diffusion process to occur the innovation has to be communicated, the focus is therefore to the social context rather than to the innovation itself.

Within a social system there are established norms, the patterns of behaviour that are acceptable within that society. Rogers proposes that communication is much more effective between homophilous individuals who share these similarities.

For an innovation to gain widespread acceptance and become a standard then it requires communication amongst members of a social system, who by definition have an established standard in place, or have yet to recognise or accept the need for one. By attempting to communicate in innovation-oriented or technical terms represents a failure to understand the underlying social norms. Due to varying levels of acceptance by members of a social system the time for an innovation to diffuse depends on the extent to which it is accepted. This is an important factor underlying the bell shaped “diffusion of innovation” curve. Continued failure to understand and empathise with the social norms may in fact mean that the innovation never crosses the chasm to become accepted within the society. Genetically modified foods in Western Europe may represent such an innovation.

Discussion and conclusions

The term e-business is unnecessary, inappropriate and unhelpful. To regard this emerging bundle of technology as an alternative business paradigm is to compound

the error. The use of such terms exaggerates the contrast between current business norms as well as amplifying the potential for innovation. Far from providing convincing evidence of the benefits of the new technology, this helps to promote the risk and uncertainty of the potential new standard compared to the security provided by the current commitment to existing standards that form the status quo. Earlier qualitative work developed within the context of bringing new technologies to market has provided a useful framework for generalisation with a larger unit of analysis.

The conversation between heterophilous groups is largely ineffective (Rogers, 1983). Whilst messages may be exchanged effective communication and understanding is much less likely to occur. This phenomenon has been recognised in a comparable field – the gap between practitioners and academics (Rynes *et al.*, 2001). They comment that:

Attempts to transfer explicit knowledge across boundaries are likely to fall on deaf ears . . . in the absence of effective intergroup socialisation.

Rather than exaggerating the differences between groups and their social norms, attempts should be made to understand the social context in which innovation occurs.

Drawing from the work of Rogers, Rynes *et al.* and others, appropriate practices would include:

- Develop an understanding of the social norms making them explicit, giving this equal if not greater importance in the innovation process.
- Regard tensions in relationships as a positive basis for interaction demonstrating the opportunity to share views, rather than seeing communication as a one-way process of technology/skills transfer.
- Social relationships are an important foundation for the development of shared meanings and language.
- Person to person interaction and facilitation of the process.
- Avoid technical terms and language that exaggerate differences, develop a mutually acceptable dictionary of terms through dialogue.
- Accept assumptions, complexity, prevarication, misunderstanding, discontinuity and indeterminacy as normal rather than exceptional. Seek to resolve during rather than before the discussion.

These guidelines form a useful basis for managerial practice and provide guidance for further research to substantiate the generalisation of the original research work.

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