Information Systems Without Information Technology

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1998

The Problem with Information Technology

There is a global problem with information technology:

A survey of all African public sector IT projects funded by the World Bank concluded: "in the majority of cases, several factors have constrained organisations from effectively using the technology and the information it provides, or have proved to be constraints on the sustainability of IT." (Moussa & Schware 1992). Some equipment remained in its original packaging or, if unpacked, sat unplugged on a desk as a very costly 'executive paperweight'.

Investigation of more than US$500m spent on IT by the Turkish government concluded: "Despite various attempts to coordinate investment, improve procurement practices and develop complementary human resources, computerization does not appear to have resulted in any measurable increase in public sector productivity." (World Bank 1993).

Research on IT-based systems in the UK public sector estimated that 20% of all IT expenditure is wasted, while a further 30-40% leads to no net benefits accruing (Willcocks 1994).

Even the biggest spender of all, the US government, has problems: "Despite spending more than $200 billion on information management and systems in the last 12 years, the government has too little evidence of meaningful returns." (US General Accounting Office 1994).

These are public sector examples but the private sector is not immune, as cross-sectoral studies in the US conclude:

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"As many as 75 percent of all large systems may be considered to be
operating failures." (Laudon & Laudon 1998)
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Paul Strassmann (1997) reports that the relationship between US corporate results and investment in information technology 'is acquiring a slightly negative bias'. Productivity growth in the Japanese economy has been far greater than that in the US despite (or could it be because of) the fact that US investment in IT is far higher than in Japan.

Failure of IT-based information systems is therefore incredibly widespread and there is a yawning gap between the claimed positive potential of IT and the largely negative reality. Huge sums of money are being invested in IT but a large proportion of this is

going to waste in total failures. An even larger proportion is resulting in ineffective or underutilised information systems. Most of the remaining systems are, at best, only partially effective.

Explaining the Failure of Information Technology

Why should this be? To help us understand the causes, we can characterise IT-based information systems in a very simple way, as a 'fried egg' of two concentric circles, with information technology as the yolk, and environmental context as the white.

On the basis of this characterisation, there can be only two possible groups of answers to the question "Why do IT-based information systems fail?"

First, are those who answer:

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"Information technology is inherently useful.  Information system
failures arise because of a context failure.  For example, because
the technology was not introduced in the right way or because some
of the necessary pre-conditions for success were not present."
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Most of the sources cited above, for example, respond to failures by claiming that improvements in the way systems are planned and managed will lead to success.

The other, minority and dissenting, answer to the question states:

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"Information technology is one giant confidence trick.  Any benefits
that might arise from the introduction of computerised information
systems are either accidental or coincidental.  Failure is the norm
and is inherent to information technology because this technology and
human systems (such as organisations) just do not mix."
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From this perspective, the claims of the sources cited above are like someone saying:

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"It's not the fact that your car has square wheels that's the
problem; you just need to learn to drive it properly.  Oh, and by the
way, I just happen to offer driving lessons."
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As schoolchildren we are taught that when an irresistible force meets an immovable object, the outcome is infinite heat. The dissenting perspective here is that information technology may be an irresistible force but current human systems are the immovable object. The outcome is the apparently infinite 'hot air' of books, magazines, television and radio programmes, articles, academic papers and consultancy reports trying to explain the inexplicable.

From this viewpoint, IT is like the story of the Emperor's new clothes: the Emperor imagines he has beautiful new clothes on; he is in fact naked, but most people think their eyes must be deceiving them and no-one is willing to risk telling the Emperor that he is actually wearing no clothes. In the same way, it is argued, those who work

with IT know that the technology does not provide benefits but everyone is afraid or unwilling to say so.

This would lead us, then, to ask: "Why is this myth of IT benefits being perpetuated?". On reflection, we find that rather a lot of stakeholders might have a vested interest in consciously or unconsciously promoting a falsely positive image of IT:

- all of the hardware and software and training companies that survive through the trade in IT
- all of the IT consultants whose jobs depend on IT
- all of the academics who work in computer science or information systems departments
- all of the journalists and other workers who produce IT magazines
- all of the staff within organisational IT or DP departments whose jobs depend on IT
- all of the managers who want a 'quick fix' for their problems and/or who want themselves or their organisations to appear up-to-date and proficient with the latest technologies.

If these ideas seem far-fetched so, at times, do the arguments of the other camp. For instance, we can examine the history of thought on management strategies for IT.

Those blaming context, not technology, for failures first advocated using computers in straightforward clerical applications. They subsequently recanted, stating that true benefits would only accrue if work and decision processes were also re-organised. Later still, it was said that true benefits would only come if all existing processes were obliterated and re-built from scratch and/or only if IT was planned strategically for the entire organisation. No doubt, in a short while, these ideas will be stigmatised as 'insufficiently radical' and 'outdated'. A new 'management flavour of the month' will appear, explaining that its new methods and techniques offer the true path to IT benefits.

In such a climate, it is a wonder that people keep buying IT. We find the reality of the technology is a constant disappointment, and yet we continue to believe that the real payoff is just around the corner if only...

- if only we buy this new piece of software,
- if only we get a new and more powerful computer,
- if only we link up to this new communications network, or
- if only we apply this new management technique to the planning and implementation of our information systems.

Imagine, attracted by an advertisement and stories of satisfied customers, you decided to buy a time machine that was claimed to allow you to travel back and forth along the centuries at will. Although the machine looks impressive in your office and you are the envy of all your colleagues, you cannot actually get it to work. Each time you take it back to the vendor, they persuade you that you need to buy a new component or, better still, a later-model time machine. At other times, they accuse you of not being able to work it properly and get you to pay for training or for someone else to

come and try (unsuccessfully) to work it. On yet other occasions, they tell you that the instructions it came with are all wrong because they are based on old-fashioned ideas about how time machines work. You are told that you will therefore - having paid for a new set of instructions - need to use the machine in a quite different manner if you want it to work.

Would you keep going back again and again, or would you pretty soon demand your money back and decide never to buy another time machine? Probably the latter. Yet with IT, people appear to be 'gluttons for punishment', returning repeatedly to the same vendors and believing their stories and spending more money on equipment that never lives up to its promise.

One could almost believe that, in a rational world, most people would have decided long ago that IT was, indeed, a confidence trick and would have relegated computing to the dustbin of history. In practice, though, rationality and the real world do not overlap much in the IT arena.

Information Systems and Development

Whether you believe the foregoing to be overstated or not, I'm sure you would agree that there are some definite problems with IT-based information systems. Rather than follow the 'context' line of enquiry as the vast majority of academic and consultancy work does, it would therefore seem at least useful to see where the 'technology' line of enquiry takes us in development.

At a recent conference, the question was posed 'What would the computer look like if it had been invented in a developing country?". More generally, one might ask "What forms of technology will sustainably support information systems in developing countries?".

One answer might be very much rooted in IT - indeed, in very high-tech IT. Geoff Walsham and Sundeep Sahay's work on environmental information systems, for example, discusses the spatial representations that Indian foresters hold in their heads (Walsham 1998). In this non-map-based culture, standard geographical information systems conflict with, rather than supporting these representations. However, one can envisage some futuristic IT that would be supportive emerging from the developing domains of virtual reality, wearable computing, and data visualisation.

An alternative answer - falling into line with the evidence presented above - would look for non-IT 'technologies': let's call them 'techniques'. Such techniques might, in fact, already exist in developing countries. We could therefore answer the first question by saying: "The 'computer' has already been invented in developing countries - but it doesn't look anything like a computer."

So what are these non-IT techniques for supporting information systems? Some are obvious and all around: conversations, stories, pictures, meetings, and paper-based methods. There may be others which those of us brought up in a rationalist and technology-dominated tradition simply fail to recognise or fail to value.

Many of these non-IT techniques are international but some might be particular to developing countries (DCs). Certainly there are information-related differences between North and South. One is constantly reminded of these when African or Asian colleagues and study fellows can remember verbatim a casual conversation from months previously whereas UK students struggle to remember what was said five minutes ago unless they've written it down.

If there are DC-specific techniques, could there be value in a transfer of these techniques from South to North, reversing the normal flows of technology (Mundy 1998)? Perhaps there could, because a clear management trend in the North over the past couple of decades has been the recognition and the legitimation of the informal and the subjective. The main emphasis of writers such as Tom Peters and Rosabeth Moss Kanter has been to expose and debunk the formal, rational models of management and organisation that were dominant during the middle part of this century.

The information systems required to support these informal, subjective processes generally need to be non-IT-based. Hence, for example, the championing by Colin Hastings (1996) of 'soft networking' as a key to success in the organisation of the future. Hence also, Tom Peters' argument that the world is too complex - and increasingly so - to understand using formal, IT-based information systems. We can never encompass reality this way. Instead, we 'live, reason, and are moved by symbols and stories.' (Peters 1987).

Developing countries have thousands of years' experience in developing soft networking, symbolism, stories, and related techniques. Before these are systematically devalued and driven out by the tide of globalising Western technology, maybe we can identify, analyse, and disseminate them for the benefit of organisations in both developing and industrialised countries.

Maybe, too, the tide of globalising Western technology has some counter-currents within it of which the following may be rather random examples:

- The decision by a number of Western nations to stop all future nuclear power plant developments.
- British legislation banning ownership of all handguns.
- Dutch 'home zones' that seek to restrict and ultimately remove cars from residential areas.
- The 'White Dot' campaign encouraging people to turn their TVs off for one week a year.
- The recent UK advert by mobile communications firm Orange seeking to reassure people about the negative impacts of information and communication technologies.
- The developing neo-Luddite movement in the US and the flan-flingers of Belgium who 'got' Bill Gates.
- Growing 'new age' and environmental movements that are at least wary of, and at most antithetical to, new technology.

What do these tell us?:

- That people are worried about new technology.
- That people have the power to shape technology trajectories.
- That some people, at least, are looking for techniques and models that are not based on the latest technology.

I therefore suspect that interest in non-IT-based information systems amongst both managers and the wider public is likely to increase. These Western 'counter-currents' are then likely to spill over into developing countries, even assuming they are not already present.

The Search for IT-less Information System Success Stories

In broad-brush terms, the story that the 'IT and Development' community told during the 1990s was the story of failure of IT-based information systems in developing countries. This is not a story that many managers, politicians or practitioners really want to hear. One response recommended by Subhash Bhatnagar (1998), which I fully endorse, is that we should search for and proclaim genuine successes in which IT-based information systems sustainably support development processes.

But there is another response. This is the effort to search for and proclaim genuine successes in which non-IT-based information systems sustainably support development processes. I do not see this as an alternative to the first response and I do not class myself as a neo-Luddite: this article was written on a PC and posted on a Web site. Instead, this search should sit alongside that for IT successes.

The 1998 conference of IFIP working group 9.4 on 'Social Implications of Computers in Developing Countries' informally suggested a few non-IT-based successes, including:

- A Mexican company that instituted a set of weekly meetings with all sectional managers, allowing them to keep in touch with real information and real happenings in the organisation (as opposed to those which appeared on any computer-based systems).
- A South African hospital that had problems with getting patient information reliably to the doctors. Rather than computerise, they simply got patients to carry their files to the doctor. Patients took great care of their files and so information losses were very limited.

The challenge is to produce and disseminate more such success stories of information systems without information technology.

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Published in: *Information Technology in Developing Countries Newsletter*