

Technological Change

Over the last 20 years Information and Communications Technology has made an impact on all organisations. Some businesses have grasped ICT to the maximum extent, whilst others have accepted its impact somewhat grudgingly. In more recent years the growth of the Internet, the impact on it has had on business and on ways of doing business, plus the ability to communicate cheaply to any point on the globe, means that all firms must now accept that ICT has to be an integral part of their operations. If they do not do this then it seems likely that they are in the long run doomed to failure.

With progress in ICT technology it is possible for computers to have an impact on

every aspect of business operations. From stock control to monitoring of staff performance, from marketing to managing budgets, from sourcing suppliers to finding buyers, from direct selling to dealing with existing customers, ICT has an important and growing role to play.

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had massive impacts on the way businesses are run, the most important of these are:

Internet Marketing.

Internet sales are increasing in a geometric fashion. Companies that have already entered this lucrative market have seen share values rocket, as well as sales (though profits are still to show up in many cases). Tesco and Iceland have a full range of products for sale on the Internet. Amazon.com, Internet book sellers look like taking up to 15% of all best seller sales within the next 2 years, and business to business trade on the Internet, where shopping around for best value is so important, has become the newest method of cost reduction. Recently a marketing analyst has stated that 'all companies must become Internet companies. If not they will die'.

Web Based Customer Relationships.

It is becoming more and more typical for firms in financial industries to have entirely web based customer relationships. Banking is done online, bills are paid, direct debits set up and cancelled., loans and overdrafts are arranged without a single visit to a branch or telephone call—all is done over the internet. The gambling industry has benefited greatly from the growth of this type of interaction with the customer. Now poker and bingo are played online, and enough people are involved to make the largest players £millions in profits.

B2B Business to Business.

B2B involves the finding of commercial buyers for businesses output, and the sourcing of components and raw materials for businesses production, via the Internet. It has been estimated by industrial economists that there are potential cost savings of between 5 and

ICT Applications

There are several ICT applications that have

10% if business operated all their purchasing through B2B.

Manufacturing Resource Planning 2 (MRP2)

Using this system all the companies operations are driven by sales forecasts. The MRP2 system takes forecasts and turns them into a series of objectives and targets for each function or department in an organisation. This system, when running efficiently (and this can be hard to achieve), can replace entire layers of management who have previously been employed running the planning and budgeting processes. MRP2 allows the maximum possible use of 'what if?' questions. Senior managers are able to judge the impacts of otherwise untestable scenarios on the organisation. This ability to computer model the firms operations reduces costly errors, which might otherwise occur if the test bed was the manufacturing unit.

MRP2 has the ability to increase efficiency, remove waste and allow the effective adoption of just-in-time systems, but its effectiveness depends upon the computer containing an accurate 'model' of the entire business operation.

Electronic Point of Sale Systems (EPOS)

The reading of bar codes at checkouts is the tip of the iceberg of EPOS systems. Below this we have a stock database, that controls stock holding and ordering in retailers, and warehouse stock holding in manufacturers, and supply from firms in the supply chain. Used most efficiently retailers can use EPOS to determine promotions, selling space allocations, and staff requirements. Manufacturers can use EPOS systems to reduce stock holding and working capital, and

ensure that suppliers supply only as and when required.

CAD and CAD

Computer Aided Design (CAD)

Computer Aided Design is an interactive computer system, which is capable of generating, storing and using geometric and computer graphics. It assists design engineers in solving design problems. This system has reduced lead in time on products, that is the length of time between the initial design concept and actual production. The shorter the lead in time, the more competitive the firm remains. CAD also allows an infinite variation on design themes, allowing all possibilities to be tested. Modifications or changes can be easily made, without having to go back to the 'drawing board'. Also CAD can identify design problems at an early stage, preventing the need for expensive reworking.

Computer Aided Manufacture (CAM)

The use of computers in production is widespread. They can be used in a number of ways, but mainly in the control of machinery. For example robotic welders in vehicle production. These machines always produce welds of the same quality, day in day out. The use of CAM can aid in flexibility of production. For example reprogramming is quite simple, but retraining a welder may be a great deal more complex. CAM can also cut costs in even small businesses. Tailors and dressmakers use CAM machines to cut material in the most economic way, ensuring that waste is minimised.

Location of Business and ICT

The rapid increase in the quality of global communications technology, and the matching fall in cost of use of this technology, has allowed large businesses the option of outsourcing or relocating their 'back office' operations world wide. Call centre operations in India, taking what were UK based jobs, have filled the newspapers recently. The costs of these operations are far lower than in the UK, (and USA and Australia, who have also seen the same effect occurring), in fact the estimated cost to the call centre operator of each 1 minute call is just 7p. This includes the cost of call and employee costs. When we consider wages in India can be just \$200 dollars a month, perhaps just 15% of UK wage costs, and that many posts are filled by graduates, we can see the attractions of this type of relocation.

Outsourcing Production.

Improvements in technology have also led to outsourcing of production. Because quality can be remotely monitored the fear that outsourcing leads to quality problems or supply chain delays has to a large extent disappeared. This means that many large firms can reduce financial risk by letting other companies manufacture their products for them. Apple Computers do not build a single iPod, but they still control and monitor production on a daily basis.

ICT in business used to be seen as an expensive method of solving problems. But increased flexibility of applications and the falling cost of hardware have ensured that all types of business use ICT in many ways. There are of course still expensive mistakes, but ICT is now found in every process in the

production chain, from stock ordering to marketing.

Consumers and Technological Change

Consumer can win in a number of ways from the new technology introduced by firms

- Internet provides easy price comparison and much more information through review sites
- More choice
- Lower prices
- Improved quality
- Convenience through home shopping and pre-arranged delivery times

But also there can be problems

- Online shopping and banking can lead to fraud
- No-one enjoys phone calls trying to sell insurance, PPI claims etc.
- Rapid technological change leads to pressure to buy the latest products—potentially leading to debt

Notes