

## COMPETING THROUGH INFORMATION TECHNOLOGY

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Despite the fact that more money is spent annually on information technology, very few firms have found competitive advantage through the use of information technology. Information technology is seen as a back-office function that is used for administrative functions and not as a key business enabler. Information technology will not only aid the business in surviving, but can be a strategic component to providing competitive advantage to the business, provided that the information technology function in the business is aligned to the business strategy. The critical factor in achieving competitive advantage through the use on information technology is not what technology is used, but how the technology is implemented and how the technology is aligned to the business.

Key words: competitive advantage, information technology, strategic alignment

### INTRODUCTION

Information technology has become a foundation of our every day life, yet business are spending more money annually on IT, often without seeing any measurable benefit to the business' bottom line. This paper investigates the use of IT not only to allow business to survive, but to achieve competitive advantage.

The research is based on a literature study. The strategies to achieve competitive advantage were researched and Information Technology concepts were then applied to the strategies to determine how competitive advantage could be achieved. Own research and practical experience in the areas of software development within many organisations across various industries have also been utilised.

Within all the specific strategies for competitive advantage (e.g. cost leadership, service delivery, product differentiation, speed) there is scope for the utilisation of Information Technology for competitive advantage. The implementation is discussed for each type of strategy. It is also concluded that the implementation of the technology is of greater importance than the type of technology utilised.

### COMPETITIVE ADVANTAGE

The use of technology that is not driven by business goals and that is not adapted to organisational culture, provide little if any competitive advantage (Gibson & Jackson 1997: 4). For any business to survive and prosper it must have some form of competitive advantage.

#### Introduction to competitive advantage

Businesses become successful because they possess some advantage relative to their competitors (Pearce & Robinson 1997:248). This advantage that they have over their

competitors is referred to as competitive advantage. Kotler & Armstrong (1996:256) defines competitive advantage as “the advantage a firm has over its competitors gained by offering consumers greater value, either through lower prices or by providing more benefits that justify higher prices”. Porter (1985:26) states that competitive advantage describes the way in which a company chooses a generic strategy and implements it to achieve and sustain advantage over its competitors.

Porter (1985:11) states that firms can possess one of two basic competitive advantages, namely low cost or differentiation.

*Low cost advantage* indicates that the firm is able to decrease the cost of providing its product to its customers. The sources of cost advantage are varied and include low resource costs, both material and labour, low cost of production and low delivery costs. With a *differentiation strategy* a firm seeks to be unique in its industry, based on attributes that are required or desired by its customers.

Pearce & Robinson (1997:249-258) add speed and market focus to the types of advantages that can be achieved. It could be argued that *speed* and *market focus* are types of differentiation advantages, however, if one considers differentiation advantage to be related to the product offering, then speed and market focus are separate advantages that can be achieved.

Table 1 shows the return on investment that can be achieved by organisations that have achieved advantage over its competitors. The average return on investment for over 2,500 business across seven industries looked as follows (Pearce & Robinson, 1997: 248-249):

**Table 1 ROI over 7 industries based on advantage**

| Differentiation Advantage | Cost Advantage | Overall Average ROI across 7 industries |
|---------------------------|----------------|---|
| High                      | High           | 35.0%                                   |
| Low                       | High           | 26.0%                                   |
| High                      | Low            | 22.0%                                   |
| Low                       | Low            | 9.5%                                    |

Source: Pearce & Robinson 1997:249

### **Cost leadership as competitive advantage**

The ability to have a cost leadership advantage requires the firm to be able to produce the product at a sustainable low cost that their competitors cannot achieve. To optimally utilise IT to achieve a low cost advantage, the cost drivers within the firm need to be analysed to see if there is potential for automation or possible replacement of the tasks involved by a computerised system. One of the major cost drivers in the newspaper industry is the actual cost of printing and distributing the newspaper. The Internet has allowed the publishing companies a much cheaper alternative to actual printed documentation. Subscribers can log onto the relevant newspaper's Internet site and read the latest news on-line. There are also

many examples in the manufacturing industry where the use of robots has substantially decreased the cost of producing products.

### **Differentiation as a competitive advantage**

Sustainable differentiation advantage requires that the firm is able to provide clients with some unique service or product. There are myriad examples of products and industries that would not exist if it were not for IT. But it is the implementation of existing products and services through the use of IT that allows for competitive advantage. Dell Computers have always been known for their unique distribution channel. There are no middlemen between the end consumer and the supplier. Customers log onto the Dell website in their own country and provide on-line specifications for the computer hardware they require. The system provides them with the cost and once the order the client accepted the order, it is sent to production where it is assembled. Normally within two weeks the machine is delivered to the client.

### **Speed as a competitive advantage**

Speed or rapid response as a competitive advantage includes providing current products quicker, accelerating new product development or improvement, quickly adjusting production processes and making decisions quickly. The growing telecommunications infrastructure and technology, like Wireless Application Protocol (WAP), which allows access to the Internet, email and faxing through the use of a cellular phone, allows business people to react immediately from virtually any place in the world.

### **Market focus as a competitive advantage**

The extent to which a company focuses on a narrowly defined market, referred to as a market niche, could serve as a competitive advantage. This focus requires that a firm learns about its target market and for this IT can deliver advantage through decision support systems and management information systems as well as corporate knowledge bases.

### **Competitive advantage from a marketing viewpoint**

From a marketing point of view (Kotler & Armstrong 1996:256) a firm can gain competitive advantage through:

- product differentiation
- services differentiation
- personnel differentiation
- image differentiation.

Each method of differentiation will be discussed to show how information technology can be used to increase the competitive advantage of companies.

***Product differentiation***

Product differentiation can be in terms of actual product offering, features, performance, style & design, consistency, durability, reliability or maintainability. Information technology can be used to automate the manufacturing process to improve the consistency and reliability of products produced.

***Services differentiation***

Competitive advantage can be achieved through speedy, convenient or careful delivery. If a slow, manual process can be automated and optimised using IT, the firm can gain advantage through speedy service. Installation, repair, training and consulting are other service differentiation methods that a firm can use to gain advantage.

***Personnel differentiation***

The quality of people employed by a firm can be a major competitive advantage to a firm. Information technology systems can be used in the analysis and evaluation process of new staff. Staff performance measurement can be done faster and more accurately using automated systems.

***Image differentiation***

Companies work to establish images that differentiate them from competitors. A company or brand image should convey the product's distinctive benefits and positioning. Information technology is used extensively in the marketing world (and specifically in advertising) to create high impact (e.g. focused advertisements).

Competitive advantage is achieved by providing a service at a lower cost or faster than a competitor. Competitive advantage can also be achieved by having a better market focus than the competitors or by differentiating the product offering in a way that competitors cannot mimic. Information is not just raw material for computers, it is also the basis for management control and one of the sources of power within an organisation (Gunton 1990: 107). Information technology can be used to enable the business to achieve competitive advantage, but to achieve optimum advantage, the information technology function and the business must be optimally aligned.

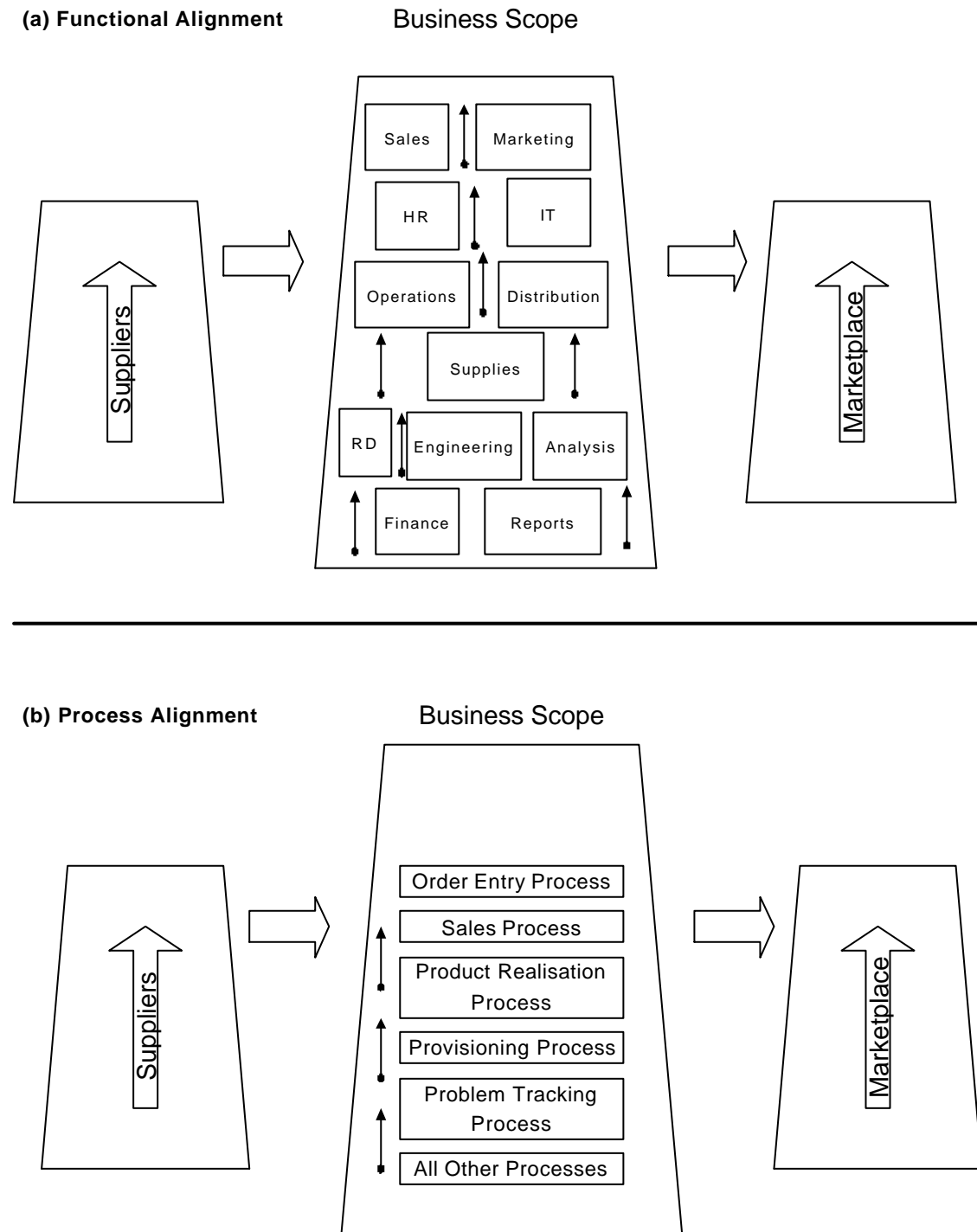
**ALIGNING INFORMATION TECHNOLOGY TO BUSINESS**

Strategic planning establishes the mission, objectives and strategies for where the organisation wants to go in the future (Cleland 2002: 69). It stands to reason for an organisation to be truly effective in achieving its objectives, all the initiatives within the organisation should be aligned with the strategy. For maximum competitive advantage there must be harmony between the Information Technology and business components of the organisation. The basic notion of alignment is that when things are in a state of alignment

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they naturally and harmoniously work together to accomplish a common goal (Boar 1994:14). Basic alignment within a business is illustrated in Figure 2.

Figure 2: Business Alignment



Source: Adapted from Boar 1994:16



- **Threshold**

The threshold state is the *minimal level of alignment required* within the business to deliver products and services. There is collaboration within the business but not to the optimal level and there is major scope for improvement.

- **Harmony**

When there is harmony in the business alignment, the business has general and continuing collaboration to achieve the business strategy. Most ventures undertaken within the business will have strategic intent.

- **Perfect**

When the business functions are not only in harmony, but are also conveying advantage to the business and each other, the business is in the perfect state of alignment.

The IT function can be in one of various states of alignment with the business strategy. The worse the alignment is, the less effective IT will be in enabling the business to maximise competitive advantage. To achieve maximum competitive advantage, the IT function must be in perfect alignment with the business strategy.

## **Models for Information Technology alignment with business**

It should be the intention and goal within all organisations to achieve a perfect state of alignment between all of its functional units, including IT. There are many ways to model IT and business alignment. Boar (1994:26) gives the following three models: a conceptual model, a four-stage alignment model and a five-stage alignment model. These three models are discussed in the following section.

### ***Conceptual model of IT and business alignment***

Within the conceptual model of IT and business alignment, IT and business are viewed as existing in parallel. IT and business need to be aligned perfectly at each level of decomposition as shown in figure 4.

In figure 4 it can be seen that business and IT need to be aligned at process and functional level. The optimum alignment of business and IT occurs when the strategy is developed jointly, based on the competitive environment and IT environment. If there is misalignment at any level between business and IT, this will result in the alignment falling in the misfit category which would result in a dysfunctional relationship between business and IT.

### ***The Four-stage model of IT and business alignment***

The four-stage model of business and IT alignment suggests that as IT improves its state of alignment with the business, the positive impact that IT has on the business moves through four stages (Boar, 1994: 26):

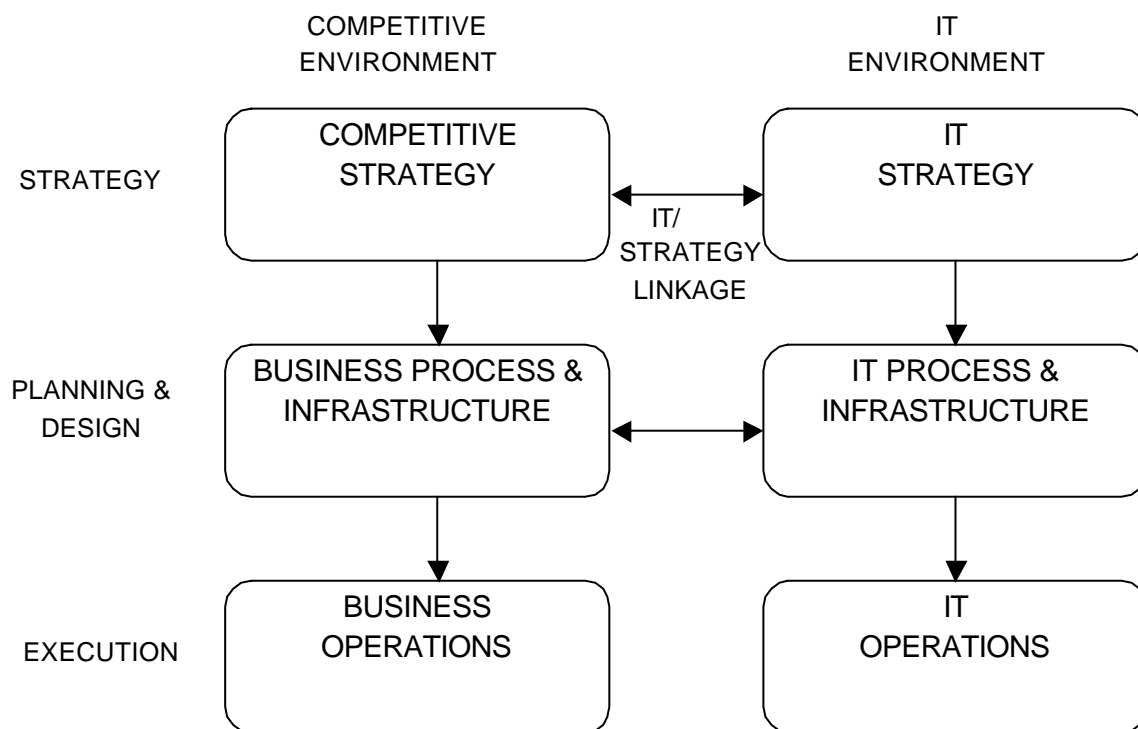
- Stage 1: Functional automation
- Stage 2: Cross-functional integration
- Stage 3: Process automation
- Stage 4: Process transformation

In **stage 1** (*functional automation stage*) IT is used to individually automate functional business areas. This is done based on individual requirements of the business functions and not focussing on the strategic requirements of the business as an aligned unit.

In **stage 2** (*cross-functional integration stage*) IT is used to build systems shared across multiple functional organisations. An examples of this stage is where a workflow system would be shared between different departments thus allowing more than one functional unit to derive benefit from a system.

In **stage 3** (*process automation stage*) IT is used to build process-centric applications that transcend functional organisational boundaries. Process automation is used to integrate the different business functions for strategic advantage

Figure 4 Conceptual alignment of IT with business



Source: McGee, as quoted by Boar 1994: 27

**Stage 4**, the process transformation stage, sees IT being used to fundamentally redesign processes and organisational structures to add value to the customer. At this stage business and IT are optimally aligned and focused on the business strategy. Enterprise Resource Planning (ERP) systems are normally used in organisational re-engineering as all the business functions are aligned with the strategic IT system, and system leads business.



### ***The Five-stage model of IT and business alignment***

Similar to the four-stage model of alignment, the five-stage model of alignment sees IT moving through five stages of increasing positive impact on the business, as IT improves its state of alignment with the business (Boar, 1994: 27). The difference between the four and five stage models is that in the five-stage model the process transformation (stage 4) of the four-stage model is separated into two phases: the business network redesign phase and the business scope redefinition phase. The complete five stage model is as follows:

- Stage 1: Localised exploitation
- Stage 2: Internal integration
- Stage 3: Business process redesign
- Stage 4: Business network redesign
- Stage 5: Business scope redefinition

In **stage 1** (*localised exploitation*) the business automation is approached in isolated initiatives. Automation is limited to the different business areas and there is no integration between systems and business areas.

**Stage 2** (*internal integration*) is the stage where IT is used to build common systems across functions within the business. Information and processes are shared within the firm.

In **stage 3** (*business process redesign*) focuses on processes rather than functions and IT is used to build application that are process-centric as opposed to function based applications. It is used to create processes in synchronisation with business strategy.

**Stage 4** (*business network redesign*) finds IT building processes and systems that integrate the customer and suppliers as one continuous system with that of the business. The value chain becomes one system focused on strategic advantage. IT is used as the cornerstone of radical re-engineering of the business. Business advantage completely drives the selection and use of the most opportunistic technologies to infuse advantage into the business process (Boar, 1994: 29).

In **stage 5** (*business scope redefinition*) is the optimal stage of IT and business alignment, IT is the enabler that allows the business management to undertake new initiatives and expand the business in terms of market, product or service. IT has achieved a state of such power, purpose and manoeuvrability that IT can be used by the business not only to improve the advantage of the firm internally, but also to create dislocations in the marketplace and allowing the business to exploit such dislocations. IT is no longer just a support system within the business, but a key driver to business competitive advantage.

### **CLOSURE**

The cost of information technology to companies increases every year, not only because the cost of resources increase, but because more and more parts of the business includes IT as part of the components used to built advantage. To achieve maximum competitive

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advantage there should be maximum alignment between the business and IT components. In the stage of perfect alignment IT enables the business to pursue new opportunities and take advantage of any dislocations created in the marketplace.

But not only do firms have to align IT to the business to maximise competitive advantage, firms need to improve their use of IT in order to survive. The market and environment is changing at such a rapid pace that even by maintaining its current use of technology, a firm is actually moving backwards compared to its competitors.

The information technology implemented by a firm is not as important as the purpose it is used for, and the purpose is not as important as the utilisation of the technology. The importance here is to implement whatever technology is selected to provide the low cost, speed advantage or product differentiation that the firm requires.

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