

**STRATEGIC CONCEPTS****STRUCTURE**

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**1.0 OBJECTIVES**

After reading this lesson, students would be able to answer

- ❖ What is Strategy + Strategy Planning
- ❖ Role of IS in Strategic Planning

**1.1 Strategy Concepts and the IS Strategy Implications**

Most organizations are today aware that information systems strategies must be developed within the wider context of the corporate and business strategy formulation and implementation processes. Further, it has become increasingly important, in the last decade, that investments made in information systems and technology throughout an organization are directed toward the achievement of business objectives and plans. This does not imply that IS/IT is only a means of implementing chosen strategies; IS/IT can also be an enabler of new business strategies, strategies that are not possible without the application of IT. However, in the past, a significant part proportion of the money spent on information systems and technology has had little relationship to those objectives, which is one of the many reasons why the potential benefits from investments made in IT have frequently not been realized. Success in managing IS/IT involves both maximizing the return on the money invested in acquiring, processing and using information within an organization, and enabling the strategic use of information either to gain competitive advantage or to repel competitive threats.

Consequently, it is vital that business managers are involved in the process of developing information and systems strategies, which means that this process must be clearly understood by those managers. It must be related to their business issues and conducted using tools and techniques that are familiar to them, in a language that they understand, completely avoiding the jargon that surrounds IT.

Formal approaches to business planning began in the 1950s and, since then, a wide range of approaches and planning tools and techniques have been developed. These continue to evolve in response to the increasingly complex and rapidly changing business environment. In this chapter some of these well-established business strategy and planning concepts and techniques are briefly outlined. As each of the concepts or techniques is discussed, implications that can immediately be derived for the development of IS strategies are considered.

## 1.0 STRATEGIC PLANNING IN ORGANIZATIONS

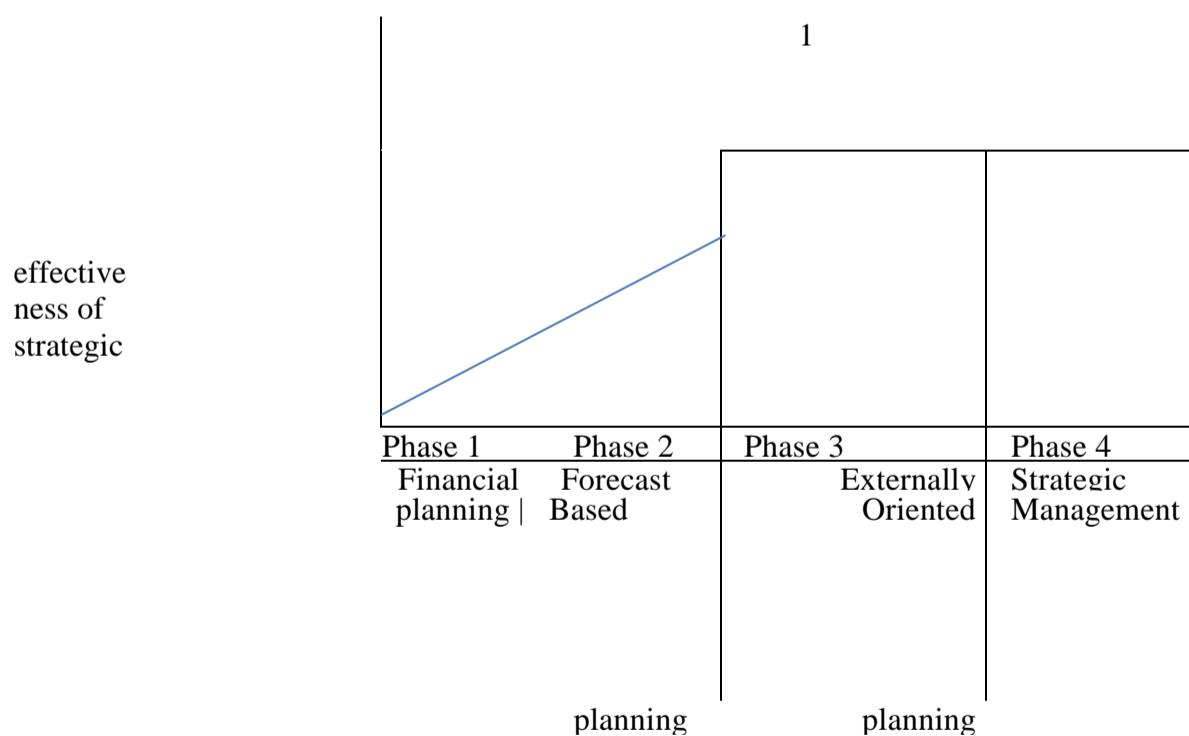
All organizations have some form of strategy, whether implicit or explicit, and the essence of business strategy lies in creating future competitive advantages faster than/i competitors. Yet, formal strategic planning, as we know it today, is a relatively recent phenomenon and arose as a result of developments in program planning and budgeting developed during World War II. During the 1950s, a second stream of thought, pioneered at the Harvard Business School, highlighted the importance of having an overall corporate strategy to integrate the various functional areas.

Yet, as early as 1976, Ansoff recognized the failure of strategic planners', at that time, to resolve the problems of the firm in the post-industrial era. He suggested strategic management, within which formal planning would be but one component of a much more complex socio-dynamic process that brings about strategic change in an organization. Exploring the evolution of strategy and strategy planning in organizations, f'jluck developed a model to describe its increasing maturity. Although there have been rainy changes in the business world, particularly since 1980, the model describes how the core issues have evolved, along with the need for new approaches to developing and implementing strategies. The basic model is depicted below. In Phase 1, the focus is on cash flow and annual financial planning, and involves relatively simple techniques to develop medium-term budgets. These exercises are usually carried out internally, department by department, and consolidated. The focus of planning is to reduce everything to a single financial issue—meeting the budget. At Phase 2, the focus is on trying to predict, or forecast, what is likely to happen within, say, a three to five-year planning horizon, usually by reference to historical performance, analyzed and projected into the future using internal trends and external parameters such as economic and market research data. It forecasts sales and market growth and predicts the effect on income and expenses and changes to the balance sheet. Plans, though, are still quantitative and internally orientated, focusing on the gap between what is targeted and the resources that are available. Within Phase 3, the organization, for the first time, considers the external environment to gain a thorough understanding of the nature of competition in its industry, in order to assess and consider potential threats and position itself to gain advantage. The organization might need to revise its product portfolio to match demands in more attractive market sectors, or increase the value-added features of existing products and services, or significantly reduce its unit costs. Each of these situations implies the identification of new product development, sourcing or marketing options and their evaluation to find those that not only suit the organization, but also best satisfy the pressures and demands of the competitive marketplace. By Phase 4, the organization is driven by innovation and becomes capable of creating its own business environment, at least to some extent. This phase implies that, while products and competitive positioning are clearly important, they are only so at a given point in time. In today's dynamic business environment, products quickly become obsolete and the only real source of competitive advantage is the ability to respond consistently to changing markets with new products and ever-improved competitiveness. The organization's values, culture and structure will reinforce the processes and competencies required to develop and sustain a leading role in the industry thus enabling it to have significant control over if's own destiny. Obviously, sustaining this leader- ship will require continuing innovation.

While some organizations are capable of a truly creative strategy, at least for significant parts of the business, they also have to monitor the competitive environment, forecast effectively and deliver an annual profit. Progressing to stages 3 and 4 implies that 1 and 2 are handled effectively, so that strategy thinking can be converted to the required financial results. The major step change depicted in the move from Stage 2 to 3 reflects the reorientation to adopt an external perspective and obtain the new knowledge required by the organization, to assess realistically what it does and how well it does in the context of its competitive environment. The model is not time dependent, unfortunately, some organizations still remain in Phase 1.

It is worth making a few observations about the evolving nature of strategic management issues based on this maturity model.

- ❖ The approach to IS/IT strategy development is often, despite the best of intentions, 'behind' the approach adopted for business strategy formulation. While the organization may well be managing overall in Phase 3 or even 4, the approach to IS/IT strategy may, in reality, still be in Phase 1 (the current project plan and annual IT budget driving the plans) or perhaps Phase 2 (IT management planning future resource requirements based on a forecast of likely needs). Where this occurs, the IT unit is often seen by the business as 'living in a world of its own' and unable to react to the rapidly changing environment.
- ❖ During the early 1990s, many organizations actually regressed down this maturity curve as recession deepened and they were forced to focus on short-term financial survival. In the UK, government policies saw the introduction of privatization, devolution to agencies and market trading forcing many organizations to plan on a much shorter time horizon, often based on one-year financial measures. As a result, many public and private sector organizations that had perhaps been planning for the long term now have to produce improvement in financial performance year on year. This seriously affected those investment plans, including IS/IT, that cannot often easily deliver demonstrable improvements within a 12-month time horizon.



### **Strategic management**

- ❖ During the 1990s, the business environment changed at a faster pace than ever before, creating increased uncertainty and making forecasting more difficult. Except in a few, relatively stable industries, it was no longer possible to interpret the past as a reliable indicator of future trends. Even though the period saw the longest sustained period of economic growth in history, increasing globalization, rapid technological advances and increasingly sophisticated customers meant that firms not adept in Phases 3 and 4 of the model suffered badly. Even household names such as Marks & Spencer in the UK and Sears in the US found the retail clothing market increasingly difficult to understand and predict. Since the 1980s, shareholders have been demanding more certain and higher returns, making strategic planning more difficult, given the increasing uncertainty about future forecasts. This has also, therefore, shortened the planning horizon causing management to focus on shorter-term, financial performance but also change strategies more frequently.
- ❖ It is not coincidental that the focus on creating distinctive brands and brand strategies has increased over the last 20 years. Brand management is aimed at achieving success in Phase 4—external recognition of real or perceived uniqueness, plus the clarity of strategy required to marshal and align all the internal resources and capabilities ‘behind the brand’.
- ❖ In the late 1990s, the commercialization of the Internet and the reduced cost of information technologies offered many opportunities to create ‘new’ strategies—to reach new markets and offer new products and services. As is usual in such circumstances, it was difficult for many large incumbent companies to adjust their strategies to become more creative and less risk averse. Most of the ‘new economy’ developments were initiated by start-ups, the ‘dot.coms’, who had no legacy of business structure or existing IS/IT environment to inhibit them. But, as rapidly became clear, neither did most of them have the full set of organizational competencies, those acquired in Stages 1-3, to succeed in highly competitive markets and industries. However, the speed with which new competitors could emerge through innovative applications of IT has forced many, more conservative organizations to realize that astute investment in IS/IT can enhance a business strategy, or at least that a lack of investment could leave the organization at a serious disadvantage. While it is oversimplistic to state that the arrival of ‘e- business’ at last made senior management realize the importance of IT.

## 1.1 STRATEGY VERSUS PLANNING

Recent debates around strategy and planning have highlighted misconception and confusion that exists in many organizations regarding the two terms. Mintzberg asserts that 'strategic planning' is not 'strategic thinking'. He writes, 'when companies understand the difference between planning and strategic thinking, they can get back to what the strategy-making process should be: capturing what the manager learns from all sources and then synthesizing that learning into a vision of the direction that the business should pursue. Similarly, Hamel asserts that planning is about programming not discovering, that strategy making must be democratic and is not the sole preserve of senior managers. He wryly poses the question: has the monarch led the uprising? Given the creative nature of the strategy process he notes that you 'cannot see the end from the beginning', a situation that is common when embarking on developing an IS/IT strategy. Porter suggests many organizations have confused operational effectiveness with strategy. While not rejecting the need for operational effectiveness, he argues that it is a necessary but not a sufficient condition. Operational effectiveness means performing similar activities better than rivals perform them. In contrast, strategic positioning means performing different activities from rivals' or performing similar activities in different ways. This implies that 'strategy' is not the result of strategic planning but the product of a number of processes. Strategy can therefore be defined as: an integrated set of actions aimed at increasing the long-term well-being and strength of the enterprise relative to competitors.

There are essentially three interrelated processes that can contribute to the establishment of such a strategy:

- ❖ strategic thinking—creative, entrepreneurial insight into the ways the enterprise could develop;
- ❖ strategic planning—systematic, comprehensive analysis to develop a plan of action;
- ❖ opportunistic decision making—effective reaction to unexpected threats and opportunities.

To achieve any or all of these, a thorough understanding of the business environment, pressure groups, stakeholders and the enterprise's capability is required. Having an effective combination of coherent planning, incisive thinking and opportunism is probably best described as strategic management, which includes not only setting the strategy but also implementing and adapting it.

Notwithstanding these arguments, organizations require a framework to guide strategizing and strategic decision making. Indeed, tools and techniques can be useful in provoking the thinking necessary to develop insights, visions and innovative strategies.

### SELF CHECK EXERCISE I

1. What is Strategic planning?
2. Name the essential three processes that can contribute to the development of a strategy.

## 1.2 THE STRATEGIC FRAMEWORK

Many of the analysis techniques of strategy formulation are used to focus on a particular strategic issue such as the analysis of competitors, the strength of the existing portfolio of products or the relative merits of different courses of action. However, there exists a far broader context within which the techniques and tools are applied, describe

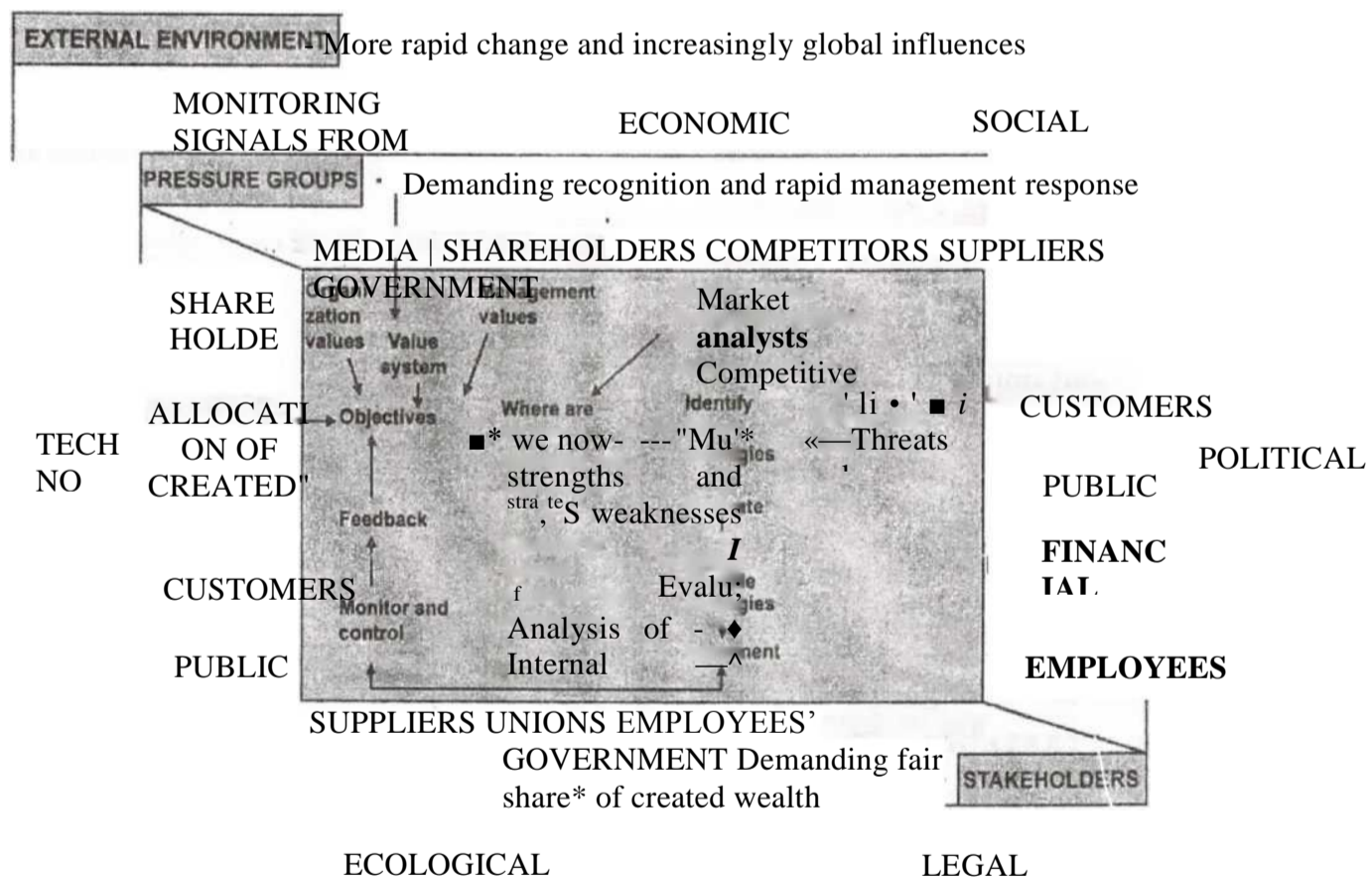
here as the 'strategic framework'. Any organization in Stages 3 and 4 of the above models will need to consider most aspects of this framework to succeed. The framework considers the factors involved in business strategic management in three layers

- ❖ the external environment;
- ❖ pressure groups and stakeholders;
- ❖ internal business strategizing and planning.

Each of these is considered briefly below, before some of the approaches and tools that can be used to analyse their impact and formulate appropriate strategies are outlined.

**External Environment**

Businesses or enterprises operate within a broadly-defined external environment, many aspects of which need to be thoroughly analyzed, understood and interpreted early in the business strategy process. The six factors that are of enduring importance and relevant to most industries and organizations are considered here. These environmental factors are normally considered together, in the early stages of strategic thinking, using a PEST (Political, Economic, Social and Technological) analysis approach (legal factors are normally included with political factors and ecology with social factors in a standard PEST analysis. These are important because of the speed with which they are changing and the effect they have on an increasingly 'global' business marketplace. Careful monitoring of these factors may lead to significant business opportunities or identification of potential threats in time to take action to mitigate the effects.



### **Economic**

The swing in emphasis to monetarism and the economics of free market could not have been predicted before the end of the 1970s. However, today, this is a feature not only of the Western world but also of Eastern Europe, the former Soviet Union republics, China and other ex-communist countries. The opportunities for increased trade are undeniable, as are the opportunities for sourcing products from countries with significantly lower costs.

The impacts of Third World debt on the Western financial system and the vigorous performance of the newly-industrialized countries with their strong trading surpluses had led Western countries to focus their attention on the Far East and away from Africa and South America. However, during the 1990s, many of those 'tiger economies' suffered severe recessions, due mainly to financial and currency problems resulting from an inability to adapt to the demands of an increasingly 'free market' for trade. Protectionism in many of their home markets had concealed a lack of real competitiveness in earlier years. As a result, companies have looked to Eastern Europe and at an increasingly attractive Latin America, due primarily to political stability, for both markets and sources of supply—although the 2001 monetary crisis in Argentina highlights that the situation requires continual appraisal.

The effects of the relative strengths of different currencies, inflation rates, money market rates and tax legislation impose increasingly complex challenges on global business. They affect decisions on where to invest and develop new markets and where to take profits.

### **Social**

The social environment can exert a major impact on strategies and strategic options. For example, within the social environment, there is a growing awareness of the problems and opportunities afforded to organizations by the increasing numbers of retired people and their relative affluence. As the general population is living longer, there is a consequent demand on pensions and geriatric health-care services. On the other hand, this part of the population has a high level of disposable income, with few commitments\*. It is anticipated that a large proportion of children born in Western Europe in 1988 will live to be 100. The impact of this is going to be enormous. Governments will have to contend with supporting a large number of retired people from a shrinking taxable labour force. On the other hand, there is ample scope for changing the face of the leisure and consumer retailing industries to cater for the tastes of the older population. IT itself has now become a 'social factor', in terms of social inclusion or exclusion being affected by individuals' access to the Internet as both an information source and channel of communication. Management philosopher Charles Handy talks about the 'information haves and the information have-nots' and the social implications of a group that are becoming increasingly marginalized. Many companies now have strategies for social responsibility.

### **Political**

Although the European Economic Community had existed for 30 years before 1992, the Maastricht Treaty forming the European Union was one of the most significant changes to take place in Europe for many years, with the dismantling of trade barriers between member states and the removal of restrictive legislation. This has been followed by a synchronization of taxes on purchases, elimination of tariffs and, from 1 January 2002, a common currency across the majority of member states. Combined with the legislation that provides for free movement of labour within the Union, the EU will soon be a market of sufficient buying power and size to be able to offer a real competitive threat to the I/S domestic market.

On the wider front, there is also a similar strengthening of economic ties between the USA and its North and South American and Pacific Rim trading customers. It is very important, clearly, that enterprises should take note of these developments in their strategizing. The 1990s were a period of (relatively) political stability across the world, following the dramatic changes at the end of the previous decade. The future may not prove as conducive to global trade development if major 'new' economies become politically unstable, as is currently the case in Indonesia. The 11 September 2001 terrorist attacks in the USA have also resulted in further destabilization of the geopolitical environment and heightened levels of uncertainty.

## **SELF CHECK EXERCISE II**

3. What is the full form of PEST?
4. In strategy development process, in which stage PEST is being conducted?

## **Legal**

In direct response to the impact of IT, many countries have introduced some form of Data Protection or Privacy Act, in an attempt to protect the interests of individuals from inappropriate use by corporations and governments of information about them. However, the extent of coverage varies across countries. The Internet has raised issues related to privacy as it provides opportunities to profile the browsing and consumption habits of website visitors. In the USA, privacy advocates led an outcry over disclosures that DoubleClick, the biggest Internet advertising company, was quietly accumulating masses of personalized information on people's surfing and purchasing habits. Many companies do not realize that there are legal limits to what they can do with the data they collect. The status and validity of 'paperless trading'<sup>1</sup>, via e-commerce, is an area where the laws of different countries have to cope with new situations and also need to be more consistent. Internet-based trading has created new legal problems regarding the point of transfer of ownership and where tax on purchases is to be paid and by whom. The music industry is the first to 'go to court' to resolve the increasingly sensitive issues of intellectual property and royalties for material sold across the Internet. It is suggested that computer-based fraud is now frequent and is costing organizations billions of pounds—but detection is difficult, and successful prosecution has proved nearly impossible.

## **Ecological**

The ecological lobby has become increasingly vocal throughout the world. The emergence of the greenmovement and Green political such diverse activities as commercial whaling and the generation of power, with a swing away from nuclear power generation back to hydrocarbons (with the consequent problems of carbon dioxide and acid rain emissions) and an increasing emphasis on the search for. alternativesources of power.

The more radical environmentalists or 'eco-warriors' extended their scope, in the late 1990s, to address social and economic issues. The Reclaim of the Streets movement brought the protest into urban areas to highlight both government and corporate neglect of the environment and people in the pursuit of economic goals. Tens of thousands of protestors lobbied the World Trade Organization summits and meetings of the Global Forum to demand action to stop environmental damage and exploitation of the people and resources of developing countries by global corporations. The Internet was used to mobilize



the protesters and organize the demonstrations. Technology has enabled protest movements to orchestrate campaigns around the world and become 'global themselves' in order to lobby against the adverse consequences of economic globalization. In the Philippines, the country where text messaging is most popular, the use of the technology by protesters is credited with helping to overthrow the country's former president, Joseph Estrada.

As well as trying to impose limitations on companies, this pressure can lead to increasing activity in research and development, and new business opportunities. Environmental groups argue that a more environmentally-conscious view of the world would create many millions of new jobs as well as save the planet.

### **Technological**

The technological environment, in general, is changing faster than ever before, creating innovative products and services and facilitating new ways of doing business and, in the process, making 'old' products obsolete more quickly. Consider the major changes in the information technologies in the past 1.5 years. These have included.

- ❖ Changes in telecommunications, including fiber optics, satellites and wireless networks, now enable companies and people to communicate far more quickly and extensively, particularly as bandwidth has increased. This has no doubt increased the intensity and speed of business activity as well as enabling more effective interchange and use of information.
- ❖ The unceasing improvements in price/performance of computers and software has meant that, for a few hundred pounds, anyone can have access to an immense variety of information resources and the ability to 'process that information. This effectively 'empowers' the individual, who is able to carry out a greater range of tasks and communicate with far more people. Harness-d properly, this power can enhance an organization's strategic ability, creating agility in the workforce; mismanaged, it can lead to organizational chaos, and the misuse of time and resources.
- ❖ As computers become ever more portable, individuals are less desk-bound, and some organizations are questioning the need for offices at all. For many companies, the traditional concept of the office has been redefined as merely places to plug-in to a network or meet other people.

The ability of individuals, as customers, to search for alternative product sources and the emergence of online buying groups, who aggregate the purchasing requirements of many customers, has undoubtedly increased the power of buyers in many consumer industries.

- ❖ The advent of digital television offers even further options; not only for commercial organizations but also for provision of services; by public sector organizations to members of the communities they serve.
- ❖ Further major advances have occurred in the areas of document and image processing, new standards like XML (eXtensible Mark-up Language) will facilitate exchange of all forms of digital images and documents among all types of access devices including the videophones that will arrive in the next decade.

Signals from the external environment must be monitored constantly and interpreted quickly in order to be able to position the enterprise both offensively and defensively for the future. To assist management in obtaining and understanding the implications of such signals, many public databases and other online information sources are now available, providing hard data and commentary on many of the factors described. A key problem is often finding the appropriate sources for relevant, up to date, reliable information.

With very few exceptions, an individual enterprise can only react to its environment, and cannot, by itself, control or change the environment. However, by grouping together with others in the same industry or with a common interest, it is possible for the group to exert influence over its external environment either by direct action or indirectly via trade associations that, through effective lobbying, can change or influence laws and regulations. In some cases, a large enterprise can shape the external environment to its particular requirements thus creating significant, sustainable.

## **1.5 SUMMARY**

This chapter discusses the importance of aligning information systems (IS) strategies with corporate and business strategies. It emphasizes that IS/IT can be both a means of implementing existing strategies and an enabler of new ones. The chapter then outlines various formal approaches to business planning and strategic thinking, including the four-stage maturity model developed by Luck. This model highlights the progression from basic financial planning to a more strategic approach that considers the competitive environment and potential for innovation. The chapter also distinguishes between strategic planning and strategic thinking, emphasizing the importance of both creative insight and systematic analysis in developing successful strategies. Finally, it introduces the concept of the strategic framework, which encompasses the external environment, pressure groups and stakeholders, and internal business strategizing and planning.

## **1.6 KEYWORDS**

**Strategy, Strategic planning, Strategic management, External environment, PESTLE**

## **1.7 REVIEW QUESTIONS**

### **1.7.1 SHORT QUESTIONS**

1. Difference between Strategy and Planning
2. What are the various factors involved in External Environment.
3. Explain the four stages of the Luck maturity model.

### **1.7.2 LONG QUESTIONS**

1. Explain the strategic planning in organizations
2. Explain the strategic framework.
3. Discuss the challenges and opportunities associated with IT to create new business strategies.

## **1.8 ANSWERS TO SELF CHECK EXERCISE**

### **1. Systematic, comprehensive analysis to develop a plan of action.**

- **Strategic Thinking**
- **Strategic planning**
- **Opportunistic decision planning**

### **3. Political, Economic, Social, Technological**

### **4. Strategic Thinking**

## **1.9 SUGGESTED READINGS**

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar

## STRATEGIC IMPORTANCE ANALYSIS

### STRUCTURE

- 2.0 Objectives
- 2.1 Determining the is Resource Management
- 2.2 Strategic Importance Analysis
- 2.3 Organizational Environment
- 2.4 Sector Analysis
- 2.5 Tool Kit (Techniques for Interpretation)
- 2.6 Summary
- 2.7 Keywords
- 2.8 Review Questions
  - 2.8.1 Short Questions
  - 2.8.2 Long Questions
- 2.9 Answers to Self-Check Exercises
- 2.10 Suggested Readings

### 2.0 OBJECTIVES

After reading this lesson, students would be able to answer

- ❖ IS resource management
- ❖ Organizational learning
- ❖ IS planning toolkit
- ❖ Sector Analysis
- ❖ Strategic Importance Analysis

### 2.1 DETERMINING THE IS RESOURCE MANAGEMENT

One way of determining the IS strategy is to ask each area of the business what their requirements are. This is likely to deliver a comprehensive 'wish list', but would result in no insight into the relevance, or genuine priorities, and little knowledge of the inherent IS/IT requirement in the strategy of the business.

Another way is for group charged with defining or updating the IS/IT strategy, to absorb every written strategy statement and interpret them into relevant IS/IT principles and critical success factors (CSF's), application requirements associated with major planned initiatives, and a set of supply criteria to deliver the service demanded by the business. This would be possible if the strategies were documented in sufficient detail and the business strategy documents contained comprehensive descriptions of the current and planned business activities and environments. Its main defect would be in the inability to feed into the development of strategy and initiatives the opportunities of exploiting IS/IT to its fullest potential. In practice, this level of documentation rarely exists, unless it is built up in an earlier business or IS strategy cycle and has been updated to reflect the current situation and requirements.

Undoubtedly, the best course is for the IS strategy to be developed in parallel with the business strategy, feeding trends, opportunities and ideas into the business strategy process, and then working closely with all areas of the business in building up a set of achievable business and associated IS/IT initiatives that will deliver the targeted performance. The IT strategy-supply-can follow directly from this analysis.

To achieve the desired results, it is necessary to obtain a complete understanding of the drivers for change and the current situation ('where we are') and then to articulate the situation being sought ('where we want to be') and start to propose how the gaps might be closed ('how to get there'). This will include both business and IS/IT initiatives. These are identified through a mixture of fact finding and analysis focused on the elements of the business and technical environments.

### **Gathering the Relevant Data**

The quality and value of any IS/IT strategy that is ultimately developed is dependent upon the depth of understanding of the business and its needs, and the constructive interpretation of these needs into appropriate information, systems and IT services. To this end, if the information is not readily available and accessible to address the areas in Table, some or all the tasks in this table should be undertaken. Whatever techniques and approaches are used, the results are more useful if they are recorded in a manner that facilitates analysis. The approach described here relies on constructing a clear, structured set of information, and, where appropriate, constructing models showing the organizational, business and information requirements. A potentially significant problem with IS strategy development is of being engulfed by a surfeit of data. What is required is sufficient understanding of the business and information environments to be able to develop sensible and realistic strategies—but not the type of exhaustive analysis associated with detailed design and development of systems.

Much of the key information required is often in the heads of employees at all levels in the organization and needs to be elicited through discussion. However, discussions and workshops will be wasted effort and frustrating for business people if used to establish facts that can be obtained from available documentation. Not only does it waste time but it also means that important opinions expressed will not be seen in a factual context. Such problems can be avoided by reviewing as much available documentation as can be found ahead of any discussions. These may include business strategy documents, or at least formal statements of objectives and key performance indicators (KPIs). Other useful documents are likely to include annual plans, budgets and forecasts.

## **2.2 STRATEGIC IMPORTANCE ANALYSIS**

### **Interpreting the Business Strategy**

Two of the inputs relate to the business perspective—internal and external. The elements of both these perspectives should be identified and analyzed, so that the demands they place on IS can be derived and that ways of exploiting opportunities or countering the threats they contain can be determined. The majority of information needs are internal, generated in the operational activities, in pursuit of ever-improving performance and the measures that are needed to monitor it, and in the communications passing between activities. Others relate to external factors and are of particular significance in areas concerned with customer and supplier relationships and competitive activity.

#### **Internal Business Environment**

The elements of the internal environment that need to be identified, analyzed and understood are:

- ❖ The business strategy, not just the objectives but the intended means of achieving them;
- ❖ The current business processes, activities and the main information entities (e.g. customer, stock item, account) and how they relate to other entities;

- ❖ The organizational environment, covering its structure, assets and skills, and the less tangible factors such as knowledge, competencies, values, style, culture and relationships.

From these, the information, systems and technology needs arising from the business strategy and the current activities of the business can be assessed and prioritized. This can be illustrated by considering two types of activity driven by the business strategy, and how they determine information needs:

- ❖ Activities that must be performed in order to contribute directly to the achievement of the business objectives, and their supporting information needs have to be identified. For example, the business objectives may include ones to increase market share and improve customer satisfaction. One of the initiatives proposed to achieve this may be to launch a new product or service. Associated information requirements include market size, competitor products and services, and customer requirements.
- ❖ Secondary activities that have to be performed in order to measure performance toward achieving those objectives must be identified. For example, once a new product has been launched, it is necessary to monitor the take-up of the product or service to see if additional funding is required for advertising and to plan the resourcing levels required to sustain the sale of the product in its particular market and meet customer demand.

### **The Business Strategy**

In analyzing the business strategy, the main requirements are:

- ❖ To identify the current strategy and, in particular, any emergent new elements since the previous strategy development cycle.
- ❖ If necessary, to interpret and analyze the strategy, and describe it in a structured manner. This is best tackled by a mixed group with both business and IS disciplines and skills represented.
- ❖ To compile and confirm the consequent IS requirements.

The business strategy may exist in a variety of forms: as formally recorded corporate, business unit or functional area strategy documents or less formally in other documents and/or in the heads of individuals. In the latter case, it can usually be understood and confirmed through discussions with senior management.

### **Business Processes, Activities and Key Entities**

Another set of deliverables, derived from analysis of the current situation, are models that depict the processes, activities and main information elements, and how they relate to one another. These models make up the business model and, together with supporting IS models, comprise an IS architecture for the business. These models offer a number of benefits. They provide:

- ❖ A valuable aid to understanding what is happening in the organization and for clearly visualizing the business processes and information flows, independent of organizational structures.
- ❖ A communications vehicle for explaining and illustrating them to a business audience in a manner that is easy to comprehend.

A means of reviewing the merits or otherwise of the organizational structure, when viewed against the business model. This is a very valuable feature, especially when evolutionary development has created anomalies in the structure of the business, as, for example, when a

- ❖ A basis for highlighting particular messages. These might be:
  - the disjointed nature of the processes, which inhibits effective operations and interrupts information flows;
  - Where CSFs are focused;
  - High-cost and other problem areas;
- ❖ A basis for conceptually defining activities and for designing and illustrating improvement opportunities.
  - ❖ A basis for indicating the scope of application areas and for defining the future systems architecture.

A mechanism for mapping current applications against the processes they support.

- ❖ A basis for explaining the importance of having a common set of terms in a business. It is quite common for organizations to have different understandings of a particular term used within the same organization. For example, one particular managing director commented that, at a board meeting, he had four different parts of the organization giving him four different answers to a question about sales. The production department said that they had produced for sale a certain quantity of goods, and that was their 'sales figure'. The marketing department had another set of figures for sales, which was independently derived from their forward-marketing projections. The sales department had a figure based on customer orders, while the finance department had a figure based on actual invoiced sales. Each of those directors was talking about what he thought was the same information, but clearly there were four entirely different sets of figures involved.
- ❖ A means of identifying high-level redundancies. As an example, an analysis was conducted at a financial institution using the techniques of data flow diagramming and entity modelling. One particular area of the organization was reviewed, and it was found that, while considerable activity was taking place within the department and information was coming into it, nothing, in fact, was leaving it. This had arisen because, some years before, exchange controls had been introduced by the government of the country concerned and this department was then established to monitor exchange control. However, when the exchange controls were relaxed the department carried on, but there was then no purpose to it

### **2.3 ORGANIZATIONAL LEARNING AND ORGANIZATION**

When considering the process and information needs of an organization, it is also essential to have a clear understanding of the organization's current structure,

relationships and the people of which it is composed. These organizational dynamics form an important input into the planning process. It is necessary to understand the environment and its skills, resources, values, culture and social interactions, as well as its management style and its relationship with the external environment.

#### **External Business Environment**

For the purposes of IS strategy formulation, it is essential to understand and analyze the environment, so that opportunities for IS/IT to impact the business and contributing to the shaping of the business strategy can be identified and explored. The analysis of the external environment and the development of IS/IT initiatives to exploit its opportunities and counter its threats

#### **EXAMINING THE CURRENT IS/IT ENVIRONMENT**

In order to assess and prioritize IS actions, it is also necessary to examine the current IS/IT environment to establish the gap between current and future targeted provisions, so as to determine whether the environment can sustain the changes required or itself needs changing. Gaps may relate to the provision of the target portfolio, either by enhancement of existing applications or by developing new ones. The remainder may affect any of the other aspects in the IS/IT environment, including the organization, its competencies, the technical infrastructure or supplier relationships.

While most of the analysis of the current IS/IT environment relates to factual matters, a further important aspect is to ascertain a business manager's perception of the role and current effectiveness of IS/IT. This will enable IS/IT management to determine whether they have to address issues creating the perceptions held and will also give a good indication as to the level of commitment the business is likely to give to any proposals.

Examination of the external IT environment enables the strategists to take account of trends and opportunities from emerging technologies and to investigate how competitive or complementary organizations are applying IT. This will lead to a more objective appraisal of current effectiveness, as well as to new ideas for potential application of IT.

#### **SELF CHECK EXERCISE- I**

1. IS strategy should be developed in parallel with the\_\_\_\_\_.
2. \_\_\_\_\_ analysis is a powerful technique for both IS and business strategy development.

#### **2.4 SECTOR ANALYSIS (CURRENT PORTFOLIO EVALUATION)**

The current suite of applications includes centralized, distributed, web- enabled and end-user systems and databases that support various aspects of the business administrative, operational, control, planning and strategic. Gaining a thorough and agreed understanding of the portfolio enables measurement of its value to the business and the contribution that systems make towards satisfying business objectives. This will include a description of the functions performed by each of the systems and an assessment of their technical and functional effectiveness, as well as the opinion of the users in terms of utility and value to them. The analysis includes not only existing systems and databases but also those under development and those planned but not yet under way. Clearly, any of these could be revised as a result of the strategy process.

#### **Current/Previous Strategy and Policies**

If IS/IT strategic formulation and planning is a continuous process, it is very likely that a previous IS/IT strategy exists, which documents the previous 'current situation, the policies that were to be adopted and plans for accomplishing the changes. This would have included the investment in capital expected and the expenditure expected in

relation to turnover or organizational budget. It would also have documented pertinent policies (e.g. information management policies or policies governing the selection of technology products, services and vendors). Careful scrutiny of the previous strategy and its business rationale will guard against making critical policy decisions that may be difficult.

**Current Assets, Resources and Skills**

These are the assets of the organization in terms of hardware, software, communications capability and any other technology employed, together with the information resources, human assets and skills of IS/IT people and users. This inventory must be reviewed for its relevance and ability in meeting future requirements.

**2.5 TOOL KIT (TECHNIQUES FOR INTERPRETATION)**

There are many techniques that can be used in analyzing the current situation and business strategy.

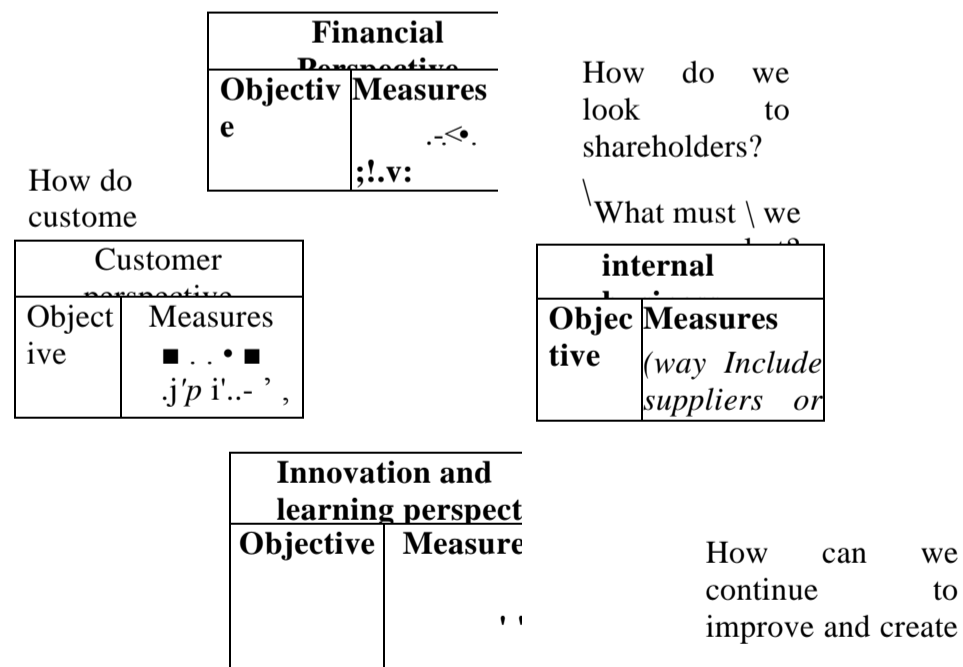
**Information requirements to meet the current business objectives: THE USE OF CRITICAL SUCCESS FACTORS AND BALANCED SCORECARDS**

In order to position critical success factor (CSF) analysis and the Balanced Scorecard, it is useful to develop the link between data, information and business results.

**BALANCED SCORECARD**

The Balanced Scorecard has become a popular tool for managing the performance of organizations and, laterally, for the development of strategy itself. Developed by Harvard Business School academics it is based on the premise that financial measures only report the results of past decisions and that, if performance measurement is to have any real meaningful impact, a more balanced set of objectives and measures is required. The Balanced Scorecard promotes the examination of performance from four interrelated perspectives, each seeking to address specific questions

Financial: How do we look to our shareholders and those with a financial interest in the organization?





- ❖ Internal business perspective: What do we have to excel v.t if we are to meet the expectations of our employees and trading partners?
- ❖ Customer perspective: How do our customers perceive us in term of products, services, relationships and value-added?
- ❖ Innovation and learning perspective: To achieve our future vision, how will we continue to improve and create future value for our stakeholders?

For each of the four perspectives, objectives can be established and relevant measures, often called key performance indicators (KPIs), assigned against each objective, leading to the information needed to measure performance.

### **Critical Success Factor Analysis**

CSF analysis is a powerful and deservedly popular technique not only in developing an IS/IT strategy but also for business strategy development. The technique often appears under many guises (e.g. 'key issue analysis' and 'do wells') and is probably the most commonly used tool in the IS strategies toolkit. It can be used in a number of different ways and for different purposes, it is used for the purpose of interpreting the business objectives in terms of actions required to achieve them, the key information and application needs of the organization and its managers, and for assessing the strengths and weaknesses of existing systems, in that context.

The technique can be used at the macro-level to examine the overall industry (i.e. define industry CSFs), the company as a whole or a particular business unit. It can also be used at individual executive level to determine which of those activities that he or she performs are the most important for achievement of success against a particular objective. In this way, the CSF process can assist in prioritizing activities and information requirements, both at individual manager and at business unit levels. In both cases, the CSF technique helps to focus attention on the key issues.

### **SELF CHECK EXERCISE- II**

3. Name four interrelated perspective used in Balanced Score Card to examine performance.
4. CSF Analysis used for the development of.

## **2.6 SUMMARY**

The chapter focuses on determining Information Systems (IS) strategy by emphasizing the importance of aligning IS strategy with business strategy. It discusses various approaches, including gathering requirements from different business areas, interpreting written strategy statements, and developing IS strategy in parallel with the business strategy. The chapter highlights the need for a comprehensive understanding of the business environment, drivers for change, and current situations to bridge the gap between current and desired states.

## **2.7 KEYWORDS**

**Critical Success Factor Analysis, Balanced Scorecard.**

## **2.8 REVIEW QUESTIONS**

### **2.8.1 SHORT QUESTIONS**

1. Why is it important to analyze the internal and external business environments in IS strategy formulation?
2. What is the role of the Balanced Scorecard in managing organizational performance?
3. How can CSF analysis be used at the macro-level and individual executive level in IS strategy development?

### **2.8.2 LONG QUESTIONS**

1. Discuss the key elements of the internal business environment that need to be analyzed in IS strategy formulation.
2. Describe the Balanced Scorecard and its four perspectives. How does it contribute to a more balanced approach to performance measurement?

## **2.9 ANSWER TO SELF-CHECK EXERCISE**

1. Business Strategy, 2. CSF, 3. Financial perspective, Customer perspective, Internal perspective, Innovation and learning perspective, 4. Developing IS/IT strategy and business strategy.

## **2.10 SUGGESTED READINGS**

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar

The following text is extremely faint and illegible. It appears to be a document page with multiple paragraphs of text. The content is not discernible due to the low contrast and blurriness of the scan. The text is organized into several distinct blocks, likely representing paragraphs or sections of a report or letter. The overall layout is a standard vertical orientation with a clear margin on the right side.

## BUSINESS STRATEGY

### STRUCTURE

- 3.0 Objective
- 3.1 Business Modeling
- 3.2 Business Strategy
- 3.3 Analyzing the Industry
- 3.4 Summary
- 3.5 Keywords
- 3.6 Review Questions
  - 3.6.1 Short Questions
  - 3.6.2 Long Questions
- 3.7 Answers to Self-Check Answers
- 3.8 Suggested Readings

### 3.0 OBJECTIVES

After reading this lesson, students would be able to answer

- ❖ What is Business Modeling
- ❖ What is business Strategy
- ❖ How to analyze the industry

### 3.1 BUSINESS MODELING

Through in-depth analyses of the business environment and the strategy of the business as well as an examination of the role that information and systems can and could fulfill in the business, a set of known requirements and potential opportunities can be identified. These needs and options will result from business pressures, the strategy the business and the organization of the various activity, resources and people in the organization. Information needs and relationships can then be converted into systems requirements and an appropriate organization of data and information resources.

To enable these 'ideal' applications to be developed and managed successfully, resources and technologies will have to be acquired and deployed effectively. In all cases, systems and information will already exist, and, normally, IS resources and technology will already be deployed. Any strategy, therefore, must not only identify what is eventually required and must also understand accurately how much has already been achieved. The IS/IT strategic plan must therefore define a migration path that overcomes existing weaknesses, exploits strengths and enables the new requirements to be achieved in such a way that it can be resourced and managed appropriately.

A strategy has been defined as 'an integrated set of actions aimed at increasing, long-term well-being and strength of the enterprise. The IS/IT strategy must be integrating not only in terms of information, systems and technology via a coherent set of action but also in terms of a process of adaptation to meet the changing needs of the business as they evolve. 'Long term' suggests uncertainty, both in terms of the business requirement and the potential benefits that the various applications and technologies will offer. Change is the only thing that is certain. These changing circumstances will mean that the organization will have to be capable of effective responses to unexpected opportunities and problems.

An organization's IS strategy is a result of its own decisions—the choices it makes in the context of evolving business and information technology environments. However, it must adapt to events, changing priorities and emerging options as well as adjust its plans according to how well and how quickly the intended IS strategy is actually realized.

Business objectives are now often updated and even radically revised within months of their establishment, and this can cause frequent reassessment of investment opportunities and priorities. To avoid wasted IS/IT investments and misuse of resources, some aspects of the IS strategy will have to be adjusted quickly and decisively, but, equally important, much of the strategy will not need to change. Frequent, unnecessary reassessment can waste resources and often causes implementation failures. The approach described in this chapter describes how this can be allowed for, as well as illustrating how the various tools and techniques can be successfully blended together into a practical and adaptable process.

### **STRATEGIC PLANNING TECHNIQUES AND THEIR RELATIONSHIPS**

- (1) External long term—external business environment
  - ❖ the state of the industry in terms of profitability, growth and structure;
  - ❖ the degree to which IS/IT is, or is capable of, changing the products, markets and interrelationships of the industry.
- (2) External short term—external IS/IT environment
  - ❖ the actual use of IS/IT by competitors and others in the industry to gain a relative advantage;
  - ❖ the opportunities created by IS/IT to change the balance of competitive forces and influences on the industry, both in the existing value chain and by new entrants or product/service substitution.
- (3) Internal long term—internal business environment
  - ❖ how new IS/IT applications could more effectively support or enhance the business strategy of the enterprise;
  - ❖ how new IS/IT applications could enable the business to adopt a more appropriate strategy to suit the future business environment.
- (4) Internal short term—internal IS/IT environment and current application portfolio
  - ❖ the degree to which existing systems support the chosen strategy and the criticality of those systems to avoiding business disadvantages and/or sustaining existing advantages;
  - ❖ the existing approach to IS/IT management and its appropriateness to the business strategy;
  - ❖ the IS/IT resources and competencies the organization has or' can easily acquire.

### **FRAMEWORK IN WHICH THE TOOLS AND TECHNIQUES CAN BE USED EFFECTIVELY**

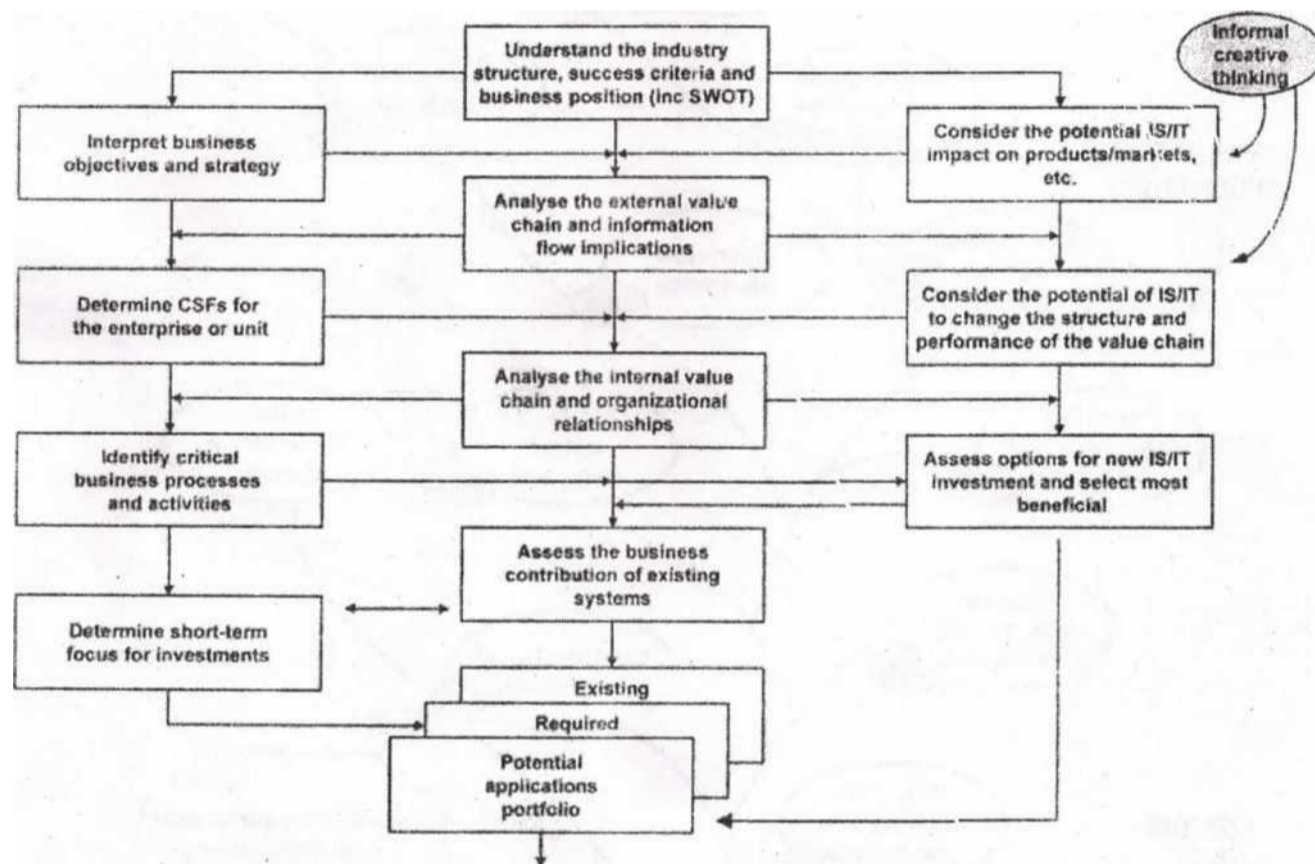
It would be convenient if a 'methodology' or structured, repeatable process could be proposed, but this is not realistic given the need simultaneously to relate existing situations to requirements to ideas. However, a framework within which the various concepts can be used more effectively, rather than as isolated techniques, is essential if the determination of the business systems strategy is to be a manageable task. Also, as circumstances alter and progress is made, the strategy will require updating, without the necessity to reappraise all the analysis and resulting conclusions.

The main objective of determining the IS strategy is to identify the required applications and their priorities, and be able to deploy resources to achieve them successfully. The outline framework depicted in

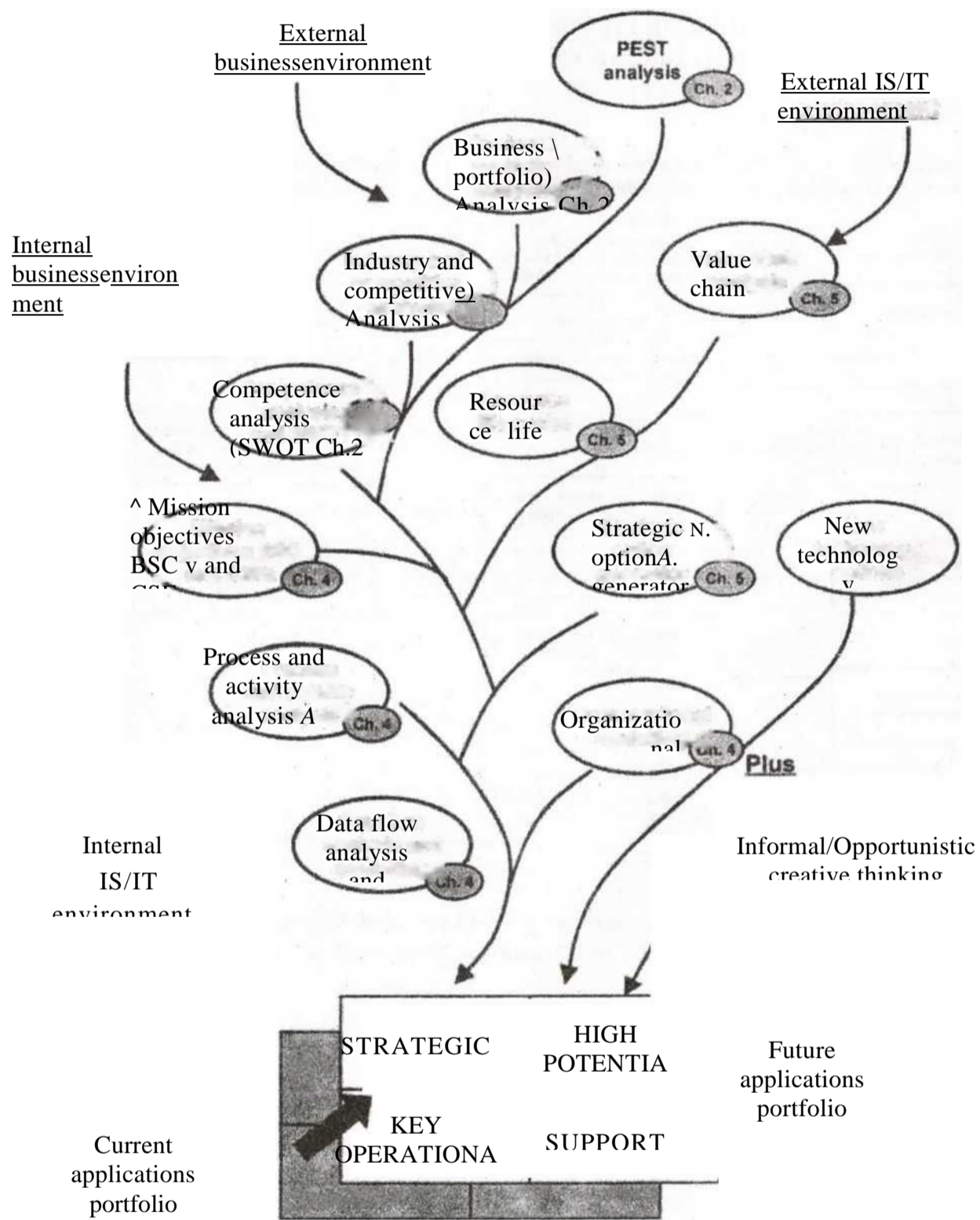
**Assessing the need for immediate investment (6-12 months)**

**Appraisal of IS/IT as it relates to the business**

**Identifying required and potential future investment - 3 years)**



- (1) The existing applications—those currently in place and being developed to be installed in the near future, usually 6-12 months. They should be assessed in terms



of their contribution to existing business processes and performance and how well they support the achievement of known future requirements. The strengths and weaknesses of each need to be understood, but in a future as well as a current context.

The required applications—those that will be necessary to achieve the business objectives and

(2) The potential applications—those that might prove valuable in the future, provided they prove feasible to deliver and can be shown to produce relevant benefits, either to the strategy directly or by significant indirect effects through improved business performance.

The different types of application and their implications are likely to result from (respectively) a thorough situation appraisal of the business and its information requirements, an analysis of the business strategy and objectives, and a creative assessment of possibilities for IS/IT in the business environment. The products of each of these processes needs to be interrelated and consolidated, which implies that the process will be somewhat iterative. Ideas, as they crystallize, will have to be reconsidered in relation to each other and the overall business options. The three columns

- (a) they need continually to reappraise how both the external and internal environments are changing and the role that IS/IT is or should be fulfilling in the business and its relationships—central column,
- (b) the need to identify and monitor new or emerging IS/IT-based opportunities to create potential advantages for the organization (or that might result in disadvantages if ignored)—right-hand column;
- (c) the need to make decisions on how best to deploy available business and IS/ IT resources in the immediate future—left-hand column.

The horizontal arrows suggest the most effective route through the ‘map’ when the strategy is first formulated, but also indicate what also needs to be considered if any changing variable causes the strategy to be reappraised.

#### **Understanding the Industry and the Potential Impact of IS/IT on Products and Markets**

Understanding the industry and the potential impact of IS/IT on products and markets is a prerequisite to any development of an IS/IT strategy. The first step is the assessment of the overall business situation in relation to the external environment, and this should be done by the business management as an integral part of the business strategy. The key issues to be considered are:

- ❖ the business units and their relationships to each other and to the corporate body;
- ❖ the stage of maturity of the industry or industries within which the businesses compete;
- ❖ the product and customer portfolios of the business units and the contributions to revenues and profits, and demands on resources that each group of products/markets makes;
- ❖ the competitive forces affecting the business units and the corporation, and their impact on the business—this in turn leads to a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the companies’ positions regarding each of the forces to identify areas of greatest concern and need for action;

- ❖ the key competencies required to succeed in the industry and the relative status of the organization's competencies in each dimension—customer, product and operations.

### 3.2 BUSINESS STRATEGY

Business objectives and strategies are the products of a number of considerations:

- ❖ what the organization might do, based on the environment within which it operates or by moving into new environments;
- ❖ what the organization wants to do, based on the values and views of, chiefly, the senior executives and stakeholders;
- ❖ what the organization must do if it is to survive in its environment, depending on the pressure groups and their influence;
- ❖ what the organization can do, based on its resources and capabilities.

Overall business objectives can be classified in a number of ways for further analysis and formulation of strategies—the Balanced Scorecard being one of the best known and most frequently used. The overall strategy will define specific objectives for the whole organization, which will then need to be analyzed and interpreted to develop functional and/or initiative-based strategies to achieve them, to reflect how each part of the organization will contribute to meeting the overall objectives. The scorecard process can be extended and formalized into a strict 'management by objectives' (MBO) scheme, which allocates responsibility to individuals for achieving their contribution to the objectives. The objectives need to be prioritized—if only into high, medium and low—and measurement criteria established to complete the scorecard.

Another way of structuring objectives, adopted by a major retailer, for use in determining IS/IT requirements considers objectives at three levels:

- ❖ permanent objectives, which reflect the mission and overall goals of the company and its long-term intentions;
- ❖ strategic objectives, which the company wants to achieve in the medium term;
- ❖ tactical objectives, which the company and its divisions can and must achieve in the short term to make strategic and permanent objectives attainable.

In terms of 'usable objectives' in IS/IT strategy formulation, the last two are the most relevant and can be assessed in terms of critical success factors (CSFs). The permanent objectives essentially provide the background to 'why' the company needs or intends to do things.

Although objectives should be driven by business requirements and be set primarily in relation to external demands, often they reflect the way in which the current organization and its managers interpret that external world in terms of what they see as necessary to do. They may not, therefore, consider enough options or may address only some of the issues. IS/IT may change objectives due to its potential impact on the business environment. Therefore, at this point, we need to bring together the potential impact of IS/IT on the industry and the objectives of the organization either to develop new objectives or qualify the priority given to existing objectives based on IS/IT threats and opportunities.

#### SELF CHECK EXERCISE- I

1. What are the three levels of objectives in the context of IS/IT strategy formulation?
2. List the four categories in the framework for assessing the need for immediate investment.



Before looking at CSFs, it is worth considering both the objectives and potential impact of IS/IT on the business in more detail in terms of industry relationships.

### **3.3 ANALYSING THE INDUSTRY**

The industry value chain is effectively a high-level information flow model, which can demonstrate the role that information plays in determining the overall performance of the industry and how it can be used by suppliers, customers and competitors to affect the potential achievement of the enterprise's strategy. The product of such analysis is an understanding of the information relationships and 'entities' that all players in the industry need to manage well to achieve success. This, in turn, can lead to an extension of the IS requirements and potentially new or modified objectives.

Appraising these possibilities in the light of business objectives and strategies, and overlaying them on the overall industry value chain, enables consideration of what the organization wishes to do to take advantage or otherwise of the options. The result will possibly lead to refinement of objectives and should produce a more focused consideration of the potential opportunities or threats. It will also identify the external organizations required to become involved in any changes in relationships and processes required or resulting from IS/IT options.

The external value chain and high-level information models then form a framework for more detailed considerations of the internal implications. More specific analysis techniques such as data flow analysis and entity modelling can then be used to define the detailed information involved, its potential sources and uses. Process analysis and modelling techniques can produce a first view of how the options might be developed and implemented.

#### **Determining Critical Success Factors**

Critical Success Factor (CSF) analysis has been the most commonly-used tool in the IS strategies toolkit and its value is increased if used in conjunction with the Balanced Scorecard. This is reasonably straightforward, provided there are not too many of either. The priority for dealing with the CSFs is not determined by the CSF ('critical' implies that no priority can be set), but by the priority of the objective that caused the success factor to be identified and by the number of objectives that will be affected by its satisfactory achievement. The next stage in the process is not, however, as straightforward. Interpreting CSFs in terms of information and information systems cannot easily be done without reference to the activities of the business and its organizational structure, which is considered below.

#### **Determining the Strategic Potential**

The next stage is to consider in more detail how the key business processes (in information and systems terms) relate to and are affected by other organizations' 'systems in the industry value chain. The strategic potential of IS/IT and its effects on the overall value chain can then be identified. The refinements of the value chain analysis resource life-cycle analysis and strategic option generators—enable consideration of which other parties in the industry, to what extent and for what purposes, the organization can and should extend information systems through the external value chain, and to exert appropriate influence and accommodate external changes in industry structures and processes. The CSFs define how important it is for the organization to do so (if at all) in order to meet its objectives. This analysis should lead to the definition of new information needs and potential systems options. How feasible it is actually to develop or change processes and systems to take advantage of such opportunities will depend on:

- (a) the effectiveness of existing internal systems in linking the chain together;
- (b) the possibility and economics of obtaining additional information; and
- (c) the willingness of suppliers and customers to cooperate, based on the benefits they perceive.

### **Identify Critical Business Processes and Activities**

From this stage, it is now possible to identify the critical business processes and activities, based on CSFs and the way in which the company adds value/incurs cost and is managed. The overlay of CSFs will also show up the interdependence of activities. The nature of the potential for business improvement will vary depending on the relationship between the value adding, cost and the CSFs associated with activities and processes:

- ❖ a high-cost, low-value-adding activity with few CSFs clearly only offers cost-reduction possibilities from IS/IT investment;
- ❖ a high-value-adding activity could be made more effective through IS/IT investment, but this will only be worthwhile if its improvement relates directly to agreed business CSFs. If, however, it is a high-cost as well as a high-value-adding activity, then IS/IT may still help to reduce the cost;
- ❖ where a number of activities are associated with a CSF, then they need to be assessed collectively in terms of options for enhancing the value or reducing the cost of each, via IS/IT developments;
- ❖ however, if an activity adds little value and is not associated with any of the CSFs, it is more important to question whether it is needed at all than to consider how to improve it through IS/IT. Every organization carries out some activities that actually add no value, and some organizations have even computerized them.

### **Assessment of New Options for Investment**

Having understood the relationship between the value chain, the organization structure and the criticality of processes and activities, it is now possible to assess the value of the various IS/IT opportunities developed earlier through the 'creative' thinking route, in terms of whether they could have an immediate impact or are of longer-term potential. The ideas and options need to be reassessed in terms of whether and how they could provide the organization with specific advantages or reduce foreseeable threats, and whether and how, in the shorter term, they can contribute to the existing business strategy by improving the current operational and developmental processes. This will depend on how closely they align with the objectives/CSFs and, hence, address known critical business activities. Because of the rationale of the overall process, the options and their current relevance should not be at odds with the prevailing business issues or strategies. Some, however, may be beyond the current objective horizon, but should be kept within the portfolio as high-potential ideas, which may become more valuable as the business moves forward and the environment changes. It may well be worth some investment to test the ideas, determine the possible benefits and examine the feasibility of achieving them. That is especially true of ideas that would apply equally well to competitors. The selection process is essentially a decision on each idea in terms of why it should be pursued or not, in the next few months or year (i.e. is it currently strategic to the business).

The overall route through the 'creative' chain can be summarized as:

- ❖ What could IS/IT do for all the firms in the industry, in terms of changing business parameters and relationships?
- ❖ What could IS/IT do for the organization, based on its particular position within the industry?
- ❖ Which options offer most immediate benefit in terms of the business objectives/strategy and the way the company operates and is managed?

### **Determining the Future Applications Portfolio**

Each of these last steps in the process is focused on defining the future portfolio of applications. The creative route will produce ideas that will be generally categorized as:

- ❖ high potential: worth evaluating further; and
- ❖ strategic: the idea relates directly to the business strategy.

The current situation analysis will probably highlight the need for new applications in each quadrant, although they are more likely to be key operational and support rather than the other two. From this will come a need to consolidate strategic and high potential applications derived from various routes, plus a need to address the weaknesses of existing key operational and support systems. Determining which weakness to address first will depend not only on current impact but on whether it will be increasingly or decreasingly important in the future. That, in turn, depends on how critical the activity is supports will be or whether it can affect any of the CSFs. Will, for instance, not integrating a system make a further strategic application impossible? CSFs determine what is of strategic importance, what offers the highest potential and which key operational weakness must be overcome. They have little, if anything, to do with support applications, where the decisions are based on the net economic benefits of investment. An approach to assessing the contribution (and strengths and weaknesses) of the existing application is needed.

At this stage, it is worth emphasizing that it is perhaps more important to deal with serious weaknesses first, especially if they could soon result in a real threat to the business or preclude opportunities being taken. In addition, some opportunities that are dependent on anything else should be pursued, in particular where they build on existing strengths, giving more chance of success.

It must be stressed again that this approach to using the models and techniques is not a methodology, but a way of bringing them together to ensure that the overall results are more complete and of greatest overall value to the organization. No one technique provides a comprehensive view of the business options for IS/IT investment and no one technique can produce certainty of conclusions.

### **SELF CHECK EXERCISE- II**

3. Explain the purpose of Industry Value Chain Analysis.

### **3.4 SUMMARY**

This chapter focuses on business modeling and strategic planning in the context of information systems (IS) and information technology (IT). It emphasizes the importance of aligning IS/IT strategy with overall business objectives and adapting to the dynamic business environment. The chapter outlines strategic planning techniques, including external and internal analyses, and provides a framework for effective decision-making. Key steps in the process include assessing current and future investments, analyzing the business environment, and identifying critical success factors. The chapter concludes by highlighting the iterative nature of the strategy formulation process and the need for a comprehensive approach to maximize value.

### **3.5 KEYWORDS**

**Business modeling, Critical Success Factor, Industry Value Chain.**

### **3.6 REVIEW QUESTIONS**

#### **3.6.1. SHORT QUESTIONS**

1. Explain the Business Strategy.
2. What do you understand by Business Modeling.
3. What are the four categories of strategic planning techniques mentioned in the chapter?
4. Explain the purpose of Industry Value Chain Analysis.

#### **3.6.2 LONG QUESTIONS**

1. Discuss the role of information systems and technology in business modeling.
2. Describe the framework for assessing the need for immediate investment.

### **3.7 ANSWERS TO SELF CHECK EXERCISES**

1. Permanent objectives, Strategic objectives, Industry Value Chain.
2. Existing applications, Appraisal of IS/IT as it relates to the business, Identifying required applications, Potential future investment.
3. Industry Value Chain Analysis helps understand how information flows within the industry, determining overall industry performance and how it can be leveraged by organizations to affect their strategy.

### **3.8 SUGGESTED READINGS**

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. This is essential for ensuring the integrity of the financial data and for providing a clear audit trail.

2. The second part of the document outlines the various methods used to collect and analyze data. These methods include direct observation, interviews, and the use of specialized software tools.

3. The third part of the document describes the results of the data collection and analysis. It shows that there is a significant correlation between the variables being studied, which supports the hypothesis of the research.

4. The fourth part of the document discusses the implications of the findings. It suggests that the results have important implications for the field of study and for the development of future research.

5. The fifth part of the document provides a detailed description of the methodology used in the study. This includes information about the sample size, the data collection instruments, and the statistical techniques used to analyze the data.

6. The sixth part of the document discusses the limitations of the study. It acknowledges that there are several factors that could have influenced the results, and it suggests ways to address these limitations in future research.

7. The seventh part of the document provides a summary of the key findings of the study. It highlights the most important results and discusses their significance for the field of study.

8. The eighth part of the document discusses the conclusions drawn from the study. It states that the results support the hypothesis and provide valuable insights into the relationship between the variables being studied.

9. The ninth part of the document provides a final summary of the study and its contributions to the field of study.



10. The tenth part of the document discusses the future directions of the research. It suggests that further studies should be conducted to explore the relationship between the variables in more detail and to test the findings in different contexts.

11. The eleventh part of the document provides a list of references for the sources used in the study. These references include books, articles, and other scholarly works that are relevant to the research.

12. The twelfth part of the document provides a list of appendices for the data and other materials used in the study. These appendices are available for review and are intended to provide additional information for the reader.

## IS CONTRIBUTION

### STRUCTURE

- 4.0 Objectives
- 4.1 Is Strategy with Wider Set of Strategies
- 4.2 The is Contribution: Creating Resource to Business Community
- 4.3 Summary
- 4.4 Keywords
- 4.5 Review Questions
  - 4.5.1 Short Questions
  - 4.5.2 Long Questions
- 4.6 Answers to Self-Check Exercise
- 4.7 Suggested Reading

#### 4.0 OBJECTIVES

After reading this lesson, students would be able to answer

- ❖ Viewing the Strategy from wider perspective
- ❖ Contribution of IS Strategy to business community

#### 4.1 IS STRATEGY WITH WIDER SET OF STRATEGIES

If the 1980s were characterized by the emergence of desktop computing and the acceptance that IS/IT could deliver competitive advantage, the

1990s could be characterized by:

An emphasis on alignment between IS/IT and business management a cross a number of dimensions

- ❖ The rapid increases in connectivity available through IT at all levels— global, industry, interorganizational and within organizations and between people—has made providing, accessing and exchanging information easier or cheaper than ever before, opening up new options for every organization and creating opportunities for completely new organizations to enter industries and provide new information-based products and services. Although many had flawed business models or little competency outside building web applications, the dot.coms created an enormous awareness of the potential.

External  
**Strategic integration**  
Internal



Business domain      IT domain  
**Functional integration**

of IT among business managers. Business-to-business (B2B) e-marketplaces or e-hubs are having less actual impact than pundits predicted in 2000, mainly because the forecasts were quite ridiculous, but also because the potential improvements to industry performance take time to be understood, in addition to the not insignificant time required to implement new processes and systems among trading partners and assimilate the changes.

- ❖ Equally, rapid developments in the IT 'supply chain' are enabling more and more of an organization's requirements for IS/IT to be sourced from external suppliers. Increasing the options available is only an advantage if the organization knows what it is trying to achieve and why, otherwise how it does it will be a constraint to its strategy, whether it's IS/IT requirements are sourced internally or externally.
- ❖ The widespread implementation of business re-engineering initiatives in organizations recognized that, potentially, more benefits from IS/IT investment would emerge through the redesign of processes to make use of the capabilities provided by technology, compared with simply deploying IT to improve existing processes.

During the 1990s, some writers expressed skepticism about the value or even the feasibility of producing strategic IS plans in the increasingly dynamic IT and business environment. Much of that skepticism was based on the apparent lack of success in many organizations of implementing the strategies they had developed. However, the reasons for this 'failure' could be due to three factors:

1. the appropriateness of the IS/IT strategy formulation and planning process given the particular circumstances of the organization;
2. the feasibility of achieving the objectives of the IS/IT strategy process;
3. the relevance of the output from the process to the business situation.

It is the last of these that can be observed and described in terms of success and failure, but it is wholly dependent on the other two factors, which is where the problems usually lie. The quality of the output will only improve if expectations are based on achieving a realistic IS strategy from an appropriate process. The real need is to manage IS/IT strategically over an extended period, ensuring that IS/IT delivers the maximum possible benefit to the business. IS/IT strategy formulation and planning is only one component of strategic management. It would seem unwise to suggest that IS/IT strategy formulation and planning is not valuable, based on the often-overambitious objectives set and the inappropriate processes that many of the organizations have employed. Earl's work, in particular, demonstrates the need for an 'organizational' approach to IS strategy formulation and planning in the complex environment of today. The research evidence available shows that only a minority of organizations appear to have adopted an adequately 'Organizational' approach to IS strategy.

It has also been argued that the IS strategy process has not kept pace with the impact, complexity or expectations of information systems and technology.

## **ORGANIZATION DEVELOPMENT BASED ON IS/IT**

Perhaps the predictions of Drucker embodied in a quotation from his thought-provoking article, are, to some degree, occurring in almost every organization. He wrote: 'we are entering a period of change—a shift from the command-and-control organization, to the information-based organization—the organization of knowledge specialists ... it is the management challenge of the future.'

The downsizing and delayering that has occurred during the past decade has changed the nature of organizational structures, with an emphasis on matrix or 'team-based' structures in the deliberate intent of both achieving 'more with less' and changing the way the business is operated and managed. Whether this can be said to be based around the 'organization of knowledge specialists' is less clear; however, these changes have in turn produced significant effects on the way IS/IT is used and managed.

In parallel with these changes to structure, brought about primarily by economic and competitive pressures, many of the forecast implications of the changes in the economics and capabilities of IT put forward by Zubo? and others have also occurred. Zubo? talked about 'information' the workforce, whereby job scope is extended due to the information available to the clerical and professional staff, 'empowering' them to make more decisions without the need for functional separation and control of activities. This again leads to team-based structures rather than hierarchical ones. The combination of an infrastructure of powerful workstations on every desk, now also in most briefcases and homes, and mobile personal digital assistants (PDAs), linked through web-based networks—both fixed and wireless—in addition to advances in software functionality and ease of use, have made new ways of working possible. They are not, however, always to the benefit of the individual who is now able to stay connected to his or her work 24 hours a day, leading inevitably to organizational expectations of staff working longer hours.

### **Industry Development Based on IS/IT**

As early as 1987, Robinson and Stanton proposed a developmental model of the increasing opportunities presented by what has become known as e-commerce. They identified four main types of potential benefit:

1. process automation (e.g. exchange of orders, invoices, etc.);
2. boundary extension—integrating processes carried out among trading partners and probably changing the way these processes are carried out internally in each partner;
3. service enhancement—sharing more or different types of information with trading partners to improve the performance of the value chain;
4. product innovation—providing products and services that customers require based on information.

We have, of course, seen all these opportunities extend to business-to-consumer (B2C) relationships with the commercialization of the Internet. The consequence of this is that organizations are now focused on developing new relationships with both customers and suppliers; implementing customer relationship management (CRM) systems being one example of this trend. Rockart and Short suggested that five forces are causing organizations to enter mutually-dependent relationships that—without effective support from IS/IT—will not always be successful. The forces are:

- ❖ globalization—in terms of both markets and sources of supply;
- ❖ time to market—the ability to develop and deliver new products quickly requires cooperation with suppliers and channels of distribution;
- ❖ risk management—in order to understand and share risks across trading partners by sharing information about changing market demand;
- ❖ service—being able to provide service excellence by bringing together resources and knowledge to meet more demanding customer expectations;
- ❖ Cost—carrying out essential value-adding processes at the lowest cost, based on where in the industry the tasks can be carried out most economically.

They argued that IT provides the essential ‘wiring together’, or connectivity, of individuals and organizations to meet these demands. This becomes ever more important as organizations focus on ‘core competencies’ and rely on others to provide the complementary resources and services required. They also recognize that this ‘value chain integration’ of external information-based relationships requires internal changes and a realignment to external-facing processes from functional structures. This in turn requires a reorientation of internal systems and (from yet another direction) the need for systems to support team working—both internal and in collaborative teams with people in other organizations. All of this implies that a key role for the IS function is to establish the infrastructure to make this possible, by working closely with their counterparts in partner organizations.

#### **SELF CHECK EXERCISE- I**

1. What does B2B stand for in the context of e-commerce?
2. Who proposed the developmental model of opportunities in e-commerce in 1987?

#### **A BUSINESS CHANGE PERSPECTIVE OF IS/IT**

A core observation from this discussion is that one way of thinking about the strategic potential of IS/IT is to view it as requiring IS competencies that can be leveraged to deliver strategic business initiatives. From this perspective, the strategic contribution of IS/IT will emerge from senior management’s awareness of how different IS competencies in the organization can be exploited to satisfy market needs and how the IS competencies themselves contribute to enabling new strategic initiatives. Creating business awareness and understanding of IS competencies is something that the IS function itself must learn to do. Recent research conducted at the Information Systems Research Centre at Cranfield School of Management suggests that this understanding is best achieved by viewing IS/IT in the context of integrated change projects, where IS competencies are deployed alongside the other essential ingredients of organizational change. This requirement, to shift emphasis from ‘IT projects’ to ‘change projects and programs, if business benefits are to be forthcoming, is a recurring finding from our research.

The extent and Caliber of an organization’s IS competencies will either increase or limit its options for change from the use of IT. From this perspective, the IS competencies define the organization’s ability to identify and deliver successfully IS/IT-related changes, in relation to the demand-side drivers that cause the changes the organization has to make or wants to make. ‘Incompetency’ in any aspect of I.S/IT management can severely impact an organization’s ability to determine, make and assimilate IS/IT-enabled change. Developing a realistic strategy involves managing supply and demand so that change initiatives work toward a common direction and competencies are developed according to business requirements.



### IS Competencies and Organizational Dimensions

The differences between the three strategy philosophies show that effective and workable strategy arises from a balanced understanding of ends,



Fig (Information systems competencies and the organizational ingredients) ways and means. The traditional Anglo-American model, however, places most of its emphasis on the ends (i.e. business objectives). Far less attention is paid to understanding the resources and competencies available and the level of change that can be used to either effect or achieve. Understanding IS competencies and their potential contribution to defining and implementing strategic change can help, provided the organizational reasons for the relative levels of competency can be understood.

In addition to the six areas of competency described earlier, this model shows five organizational dimensions that, from our research, affect either the development of a competency or its deployment. As illustrated by the five 'organizational ingredients' problems with any of the competencies may be associated with leadership, structures and processes, roles, relationships and behavior. An analysis of the inadequate IS competencies in relation to these five factors can reveal causes of the lack of competency in an organization and, consequently, what action can be taken to overcome those weaknesses and improve the ability of the organization to deliver a visible and significant business contribution from IT-enabled change programs. Again, from our experience in applying the assessment technique in many organizations, inappropriate structures and processes and roles are most commonly the root cause of weaknesses, although ineffective leadership is often not far behind. The other two dimensions—issues in relationships and behaviors—are rarely the cause of problems, but are often the visible effects of problems elsewhere.

#### **4.2 THE IS/IT CONTRIBUTION: CREATING RESOURCE TO BUSINESS COMMUNITY**

Any organization ultimately makes investments in IS/IT to create value for its stakeholders, whether they are shareholders, customers, employees or others with a vested interest in sharing in its success. In the late 1980s and early 1990s, studies reported a 'productivity paradox' and fueled a quest for economic analysis to determine whether links existed between IT investment and productivity and IT investment and profitability. A significant body of research has explored the relationship between IS/IT investment and business performance between the means and ends—and the results have been diverse. At an industry level, results have been inconclusive. At an organizational level, where the findings are more meaningful for management, the results have illustrated the obvious: some organizations have achieved benefits from their investments, while others failed to achieve much from their spend. Conducting this type of research is fraught with difficulty, as it is a complex task to isolate the IT variable and determine whether or not it actually contributed directly to the outcome.

Even if a positive relationship between IT investment and performance improvement can be demonstrated to provide the case for making an investment, it gives little guidance regarding the value-creation process.

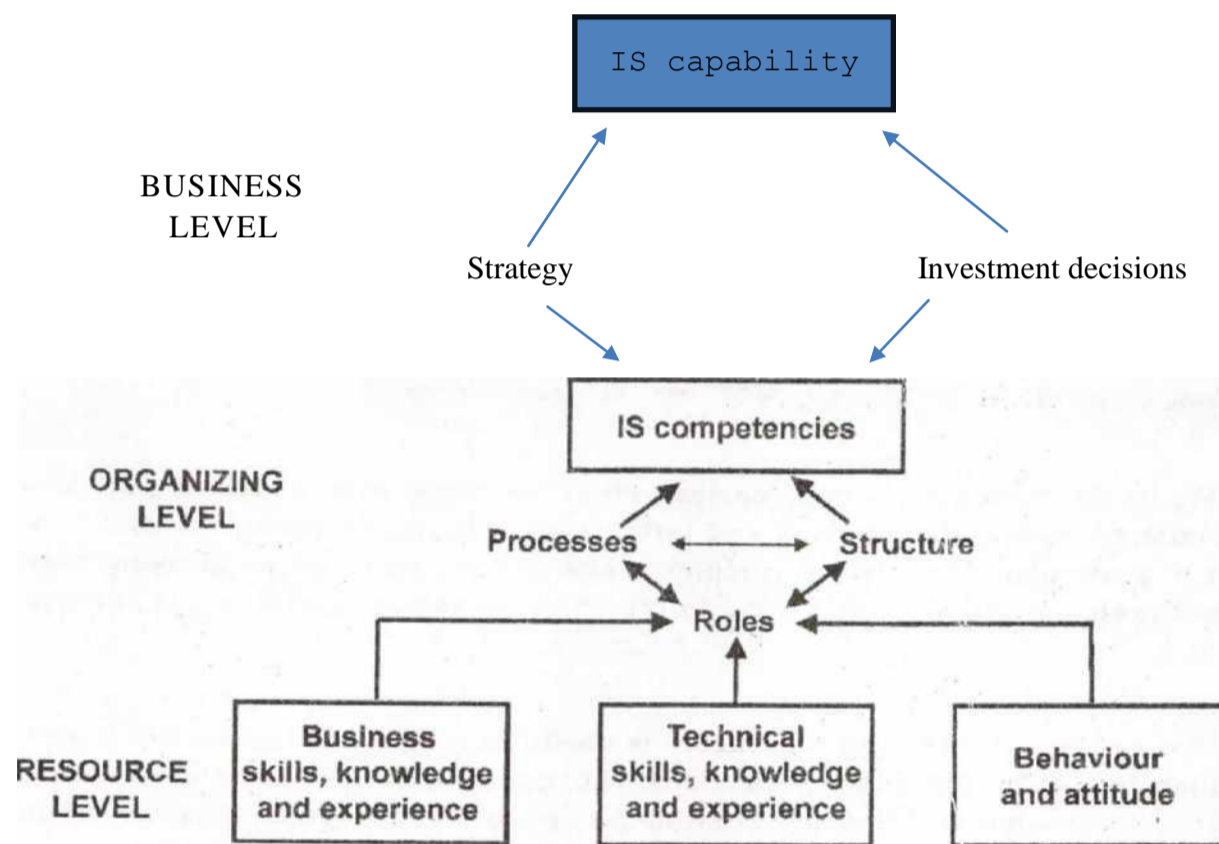
Indeed, it does caution against placing too much emphasis on investment proposals that only define the expected return on investment. Whether benefits that justified the investment actually occur is less certain; an issue that the Benefits Management process seeks to resolve. Moreover, IT value does not occur at a point in time, but rather unfolds over time through the effective use of the applications and the infrastructure. The most helpful theoretical model to date explaining the steps involved in IS/IT value creation (i.e. linking IS/IT investment to business performance) has been proposed by Soh and Markus. The model captures the major ingredients of the recipe for transforming IS/IT investments into improved organizational performance. The recipe suggests the necessary processes and the sequence that leads to success: organizations spend on IS/IT and, subject to varying degrees of effectiveness during the management of IS/IT, obtain IS/IT assets. 'Quality IS/IT assets, if combined with the process of appropriate use, then yield favorable impacts. Favorable IS/IT impacts, if not adversely affected during the competitive process, lead to improved business performance.'

#### **A MODEL LINKING THE IS CAPABILITY WITH IS COMPETENCIES AND RESOURCES**

The model has three levels: the resource level, the organizing level and the business level. The resource level denotes the resource components that are the key ingredients of the IS competencies. In managing IS, resources are essentially people and their skills, knowledge and behavioral attributes. The organizing level is concerned with how these resources are mobilized and marshalled via structures, processes and roles to create IS competencies. It is, however, only at the business level that the capability actually manifests itself and is ultimately recognized in superior organizational performance. All organizations have an IS capability. For some, however, it is weak and severely affects that organization's ability to affect or assimilate IS/IT-related strategic change. That with a strong IS capability can both leverage IS/IT-enabled change for business advantage and also absorb change.

In order to illustrate the link between resources and the IS Thefig below depicts fromresource to capability It has three levels

1. Business level
2. Organizing level Resource level
3. Resource level



capability, we first develop the relationship between resources and the IS competencies

In an organizational context, competencies are embedded in organizational processes and 'business routines and are bounded by the structure of the organization. The expression of a particular competency in an organization depends on people applying their knowledge, integrating their knowledge, interacting with others and coordinating their actions— this they do by performing roles in processes. Consequently, people, as the receptacles of knowledge, are central to a particular IS competency manifesting itself, assuming that a conducive environment exists in the organization.

### Processes

Viewing a process as 'a set of activities' has emerged out of manufacturing industry and is a fairly rigid viewpoint of the concept and may not be either appropriate or indeed applicable in all situations, particularly in knowledge-oriented environments. In such context it is more appropriate to view the concept of process in terms of roles, as

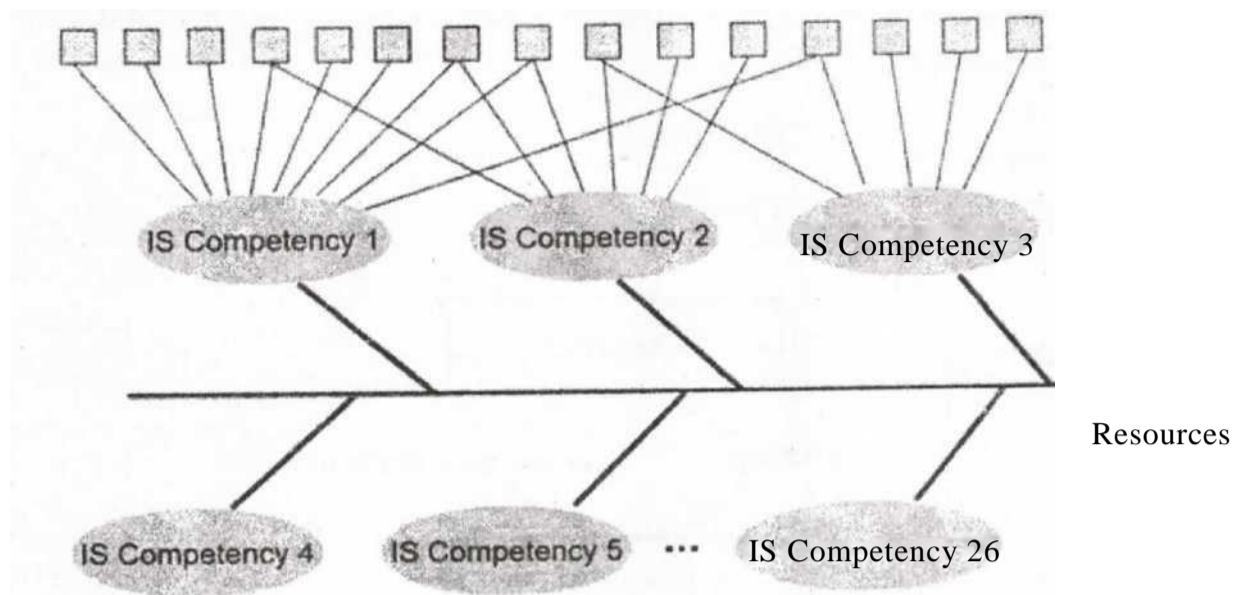


Figure Resources and competencies well as activities, with a process portrayed as ‘a collection of roles collaborating and interacting to achieve a particular goal.’ Such a view is of particular relevance in complex tasks or processes, where bringing together specific knowledge and skills is critical to the ability of the organization to perform the task.

### Roles

The concept of roles and role theory is useful in understanding the behaviour of individuals in both groups and organizations. The history of role theory dates to the 1930s, when sociologists and anthropologists studied roles as a key to explaining the origins of social behavior.

In an organization, an employee’s primary role is indicated by a position title and specified by a ‘job description’. However, employees are likely to have to perform different roles at different times. In order that the organization can achieve its goals and objectives, the work of individual members must be linked into a coherent pattern of activities and relationships and this is achieved through the ‘role structure of the organization. While roles can be tightly or loosely defined and have different degrees of discretion associated with them, they do encompass the expected behaviors attached to a position or job. Individuals may perform many roles, operate within a number of processes and consequently contribute to many IS competencies.

### Structures

Both processes and roles are framed by the organization structures. Structure is traditionally seen as being concerned with the systematic arrangement of people, departments and other subsystems in the organization. The structure of the organization can affect the performance of processes, particularly those that cross departmental or functional boundaries. The concept of business process re-engineering emerged as a consequence of the problems of functional organizations and called for a greater focus on process in designing organizations.

### From IS Competencies to IS Capability

„ i, only at the business level that the IS capability actually manifest itself, reflecting the organization’s ability to achieve sustained superior performance through IS/IT. As has been argued above, this requires fusing IS knowledge, establishing a robust and flexible technical platform and instituting an effective use process.

The extent to which IS competencies contribute toward the IS capability is dependent on two aspects: the strategy and investment decisions. Both define whether the IS capability is a source of competitive advantage, a mere necessity for competitive parity or, indeed, whether it is placing the organization at a competitive disadvantage. Although having an IS capability being a business imperative today, different organizations may do it in different ways, but almost all rely on a combination of internal and external resources and even some externally provided competencies.

### From Capability to Improved Business Performance

An IS capability only delivers actual value through implementation, in **terms** of the way it is used in improving business performance. Both the intended improvement in performance and the way IS/IT delivers or creates that improvement should be explicitly stated in the business and IS strategies. Figure (below) illustrates how we see IS competencies fitting within an overall model of the organization and its performance. It illustrates the relationship between business strategy, IS/IT strategy, P services, business operations and performance. This model emphasizes that business performance ultimately derives from business operations-the configuration of people, processes, structure, manufacturing, etc.-not directly from IT, even though technology may be a core

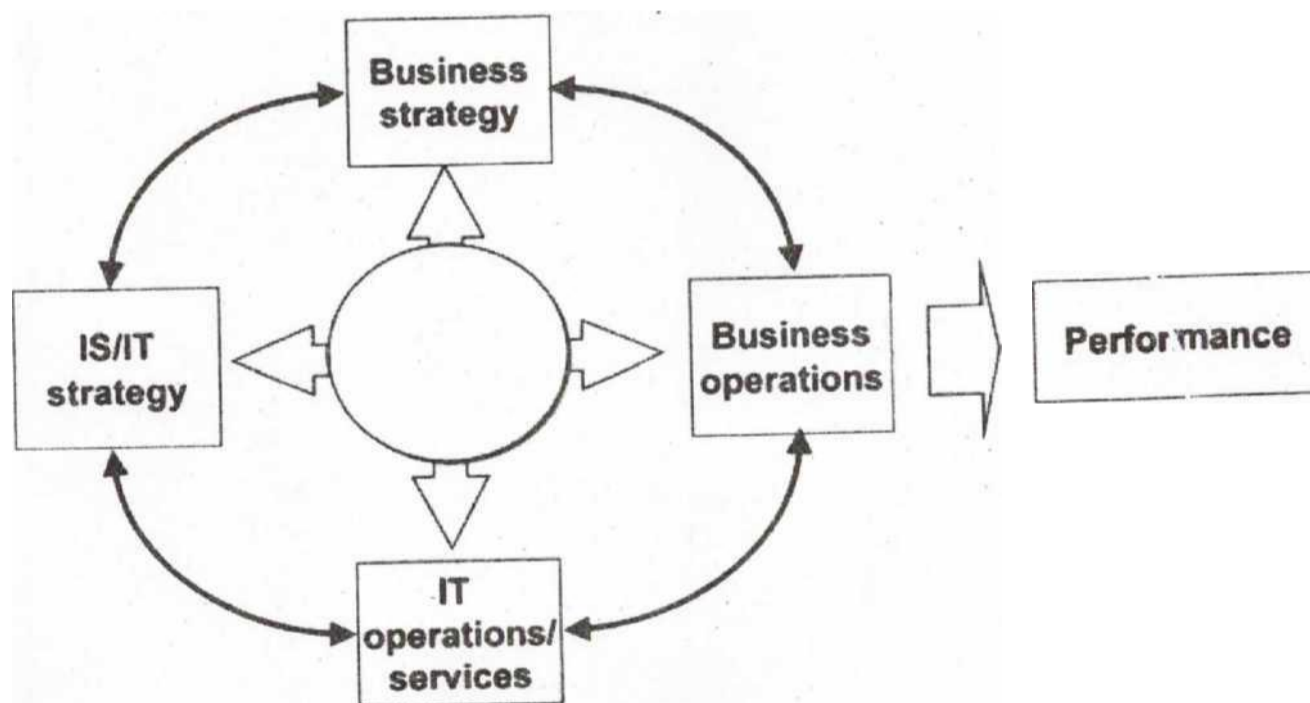


Figure (The relationship between IS competencies and business performance) component without which business operations could not be performed successfully.

Direction and purpose for business operations is given by the business strategy, which while shaping the IS/IT strategy in terms of defining requirements, is itself impacted by opportunities provided via IS/IT. The IS/IT strategy determines the what and how of IS/IT, and provides the blueprint for IT operations and services.

The IS competencies impact all four area of the model. They determine the extent to which IT opportunities are incorporated in business strategy, the effectiveness of business operation, how well the IT infrastructure is designed and resourced, and the level of performance achieved by IT operations and the quality of IT services.

A weakness in any area of IS competency affects the overall IS capability and directly or indirectly impacts the business operations and ultimately affects business performance. We believe that the new IS alignment is concerned with how well the organization develops and utilizes its IS competencies in each of the four area of the model. This implementation- based view contrasts with the traditional view that just considers the alignment of the business and IS/IT strategies or the structures and processes of the IS function and activities in relation to the business organization.

### **SELF CHECK EXERCISE- II**

3. What is the focus of the Benefits Management process in IT investments?
4. IS competencies contribute toward IS capability, which ultimately impacts

### **4.3 SUMMARY**

The chapter discusses the evolution of Information Systems (IS) strategy from the 1980s to the 1990s. It highlights the importance of aligning IS/IT with business management across various dimensions and emphasizes the impact of increased connectivity and globalization. The discussion touches upon business re-engineering initiatives, skepticism about the value of strategic IS plans, and the need for an organizational approach to IS strategy formulation.

The chapter explores the transformation in organizational structures due to downsizing and delayering, leading to a shift from command-and-control to information-based organizations. It also delves into industry development based on IS/IT, particularly in the context of e-commerce, B2B relationships, and the forces driving organizations to enter mutually-dependent relationships.

Finally, the chapter addresses the IS/IT contribution in creating value for stakeholders. It reviews the productivity paradox, explores the relationship between IT investment and business performance, and introduces a model linking IS capability with competencies and resources.

### **4.4 KEYWORDS**

**Business-to- Business, Strategic Integration**

### **4.5 REVIEW QUESTIONS**

#### **4.5.1 SHORT QUESTIONS**

1. What are the four main types of potential benefits identified by Robinson and Stanton in the context of e-commerce?
2. What does the IS capability deliver in terms of business value, according to the discussed model?

#### **4.5.2 LONG QUESTIONS**

1. Elaborate on the concept of IS competencies and their role in delivering strategic business initiatives.
2. Discuss the model presented in the chapter that links IS capability with competencies and resources. How does it illustrate the organization's ability to achieve sustained superior performance through IS/IT?

### **4.6 ANSWERS TO SELF CHECK ANSWER**

**Lesson No. 5 AUTHOR: SAHILRAJ**

**INFORMATION SYSTEM INVESTMENT**

**STRUCTURE**

- 5.0 Objectives
- 5.1 Information System Investment
- 5.2 Benefit Level Analysis
- 5.3 Summary
- 5.4 Keywords
- 5.5 Review Questions
  - 5.5.1 Short Questions
  - 5.5.2 Long Questions
- 5.6 Answers to Self-Check Questions
- 5.7 Suggested Readings

**5.0 OBJECTIVES**

After reading this lesson, students would be able to answer

- ❖ Investment decision in Information Systems
- ❖ Benefit level analysis

**5 1 INFORMATION SYSTEM INVESTMENT**

Investments in systems and technology compete with alternative investments such as buildings, plant, equipment, research and development (R& D) and advertising, for the organization's funds. IS/IT investments have traditionally been evaluated like capital projects such as plant and equipment assuming a fixed cost offset against net revenue over the life of the application. However, many modern applications are more like 'new business ventures or business initiatives where the financial aspects of the outcome can only be guessed and the technology is only one component of a major change program. There is no simple answer to the question: on what basis should IS/IT investments be assessed against other investments? However, it is important that some general rules are established, within which applications and supporting technology requirements are evaluated. Otherwise, any strategy will be distorted over time by inconsistent, even arbitrary, decision making.

If the organization was able to develop, at any one time, all the applications demanded, inconsistent evaluation would not really matter. The overall return on IS/IT investment might be very poor, but at least the worthwhile would get done as well as the worthless!

However, in most cases not all demand can be satisfied and priorities must be set.

If no consistent justification approach is followed, the more beneficial applications may be deferred, allowing those that make a lesser contribution to proceed. Assuming that does not mean an opportunity completely forgone, which may occur with delay, the resources and funds invested will have provided a poorer return than could have been achieved hardly good management practice.

An obvious conclusion from the above is that the same principles and practices should govern the 'go-no-go' decisions for individual applications and deciding priorities across applications competing for resources. The only additional factor, assuming that systems are not sequentially dependent, is the number of resources consumed. The limiting factor is normally people, in quality (particular skills or knowledge), but the same logic applies whatever is the limiting resources (e.g. finance)- priority should enable maximum return from the use of that resource.

**EVALUATING IS/IT INVESTMENTS**

Much has been written about how investments in IS/IT should be assessed and

justified. There is little, if any, consensus on how it should be done, but considerable consensus that the methods used are rarely appropriate. Several surveys have shown that there is still virtually no consistency in the practices used.

A pure technology investment cannot strictly give a return on investment, unless it replaces an older technology and carries out the same functions more efficiently. Most technology investments are justified on the back of applications. Even if capacity and infrastructure components have to be purchased in advance of the need, the justification should be primarily based on their subsequent use in business applications and the resulting benefits. However, it is often difficult to associate all infrastructure investments with the subsequent benefits of using applications, even where sophisticated capital cost recovery accounting techniques are used.

Another point of evaluation logic, which is perhaps peculiar to IS/IT investments, is the way in which particular costs and benefits should be treated. Most accounting evaluation practices are conservative, expecting the worst and mistrusting the best. Raw IT costs have been reducing at 25% per annum for some 25 years, and this is difficult for accounting procedures to accept when evaluating systems with 5, 8 or 10-year lives.

This changing reality of running costs of systems over time must be allowed for where shared resources are used. It is important to take a realistic (even marginal) view of the costs rather than a theoretical one.

Equally frequently, the full costs of 'development' are not included. Normally, the IS function and procurement costs for hardware, software licenses and purchased services are estimated in some detail, but costs incurred by business departments in specifying, testing and implementing the system are rarely included adequately.

On the other side of the coin, identifying and quantifying the benefits of any system can be a difficult.

Parker has assessed in detail the ways in which information and systems benefits accrue and how they can be quantified to help in justifying investments. They consider three main types of application:

1. substitutive technology replacing people with economics being the main driving force, to improve efficiency.
2. complementary improving organizational productivity and employee effectiveness by enabling work to be performed in new ways;
3. innovative achieving a competitive edge by changing trading practice, creating new markets, etc.

They suggest ways in which each of the different types of application should be justified and define five basic techniques for evaluating benefits:

1. Traditional cost-benefit analysis, which allows for efficiency improvements in organizational processes resulting from automation (e.g. automating invoices and sending them electronically to customers via e-commerce, saving labour and data entry costs for all parties).
2. Value linking, which estimates the improvement in business performance, not just savings made, from improving the linkages between processes or activities (e.g. automatic reconciliation of orders, invoices and payments to



enable accounts staff to spend more time resolving customer queries and issues, leading to fewer bad debts and less dissatisfied customers), or interactive component design with suppliers via a shared Computer -Aided Design (CAD) system, to reduce the number of iterations needed.

3. Value acceleration, which considers time dependence of benefits and costs in other departments of system improvements (e.g. giving sales data to buyers on a daily basis, improving their ability to respond to changes in demand and negotiate more effectively with suppliers). This implies that benefits -an occur in other parts of the business, not just where the system is actually implemented.
4. Value restructuring, which considers the productivity resulting from process and organizational change and change of job roles (e.g. information-intensive tasks such as forecasting and planning can often only be improved by a combination of better systems and a change in organizational responsibilities).
5. Innovation evaluation attempts to estimate the value to the business of new business or new business practices levered from IS/.IT

The above categories of benefit evaluation are suggested to be related to their application types and the portfolio classification, as shown in Figure below.

Although it is important to quantify and express in financial terms as many of the costs and benefits as possible, it is simply not feasible to express all the benefits of systems in financial terms, and it serves no useful purpose to develop spurious calculations to quantify the unquantifiable. If a new system will reduce staff frustration and stress by organizing policy and procedure information in an electronic library, accessible

Figure below represents Relationship between benefit types and the application portfolio. It has following levels

1. Cost benefit
2. Value Linking
3. Value Acceleration
4. Value Restructuring
- Innovation Evaluation

	Substitutive (efficiency)	Complementary Effectiveness	Innovative (competitive)
1. Cost/Benefit	✓	✓	
2. Value linking	/	✓	/
3. Value acceleration	✓	/	
4. Value restructuring		/	
5. Innovation			✓

Support
High potential

---

Key operational

**Strategic**

Figure Relationship between benefit types and the application portfolio from every desktop via an Intranet, it is difficult to calculate all the benefits financially even after the event, let alone before it has happened. However, it is important to determine in advance how any intended benefit will be measured.

What is more important is to base the assessment of application investments on the overall nature of the contribution they are expected to deliver to the business. The portfolio approach can offer help in making such judgements. The rationale for developing applications or investing funds and resources in each segment of the matrix is different, therefore the evaluation process should be different. The arguments used to justify a prototype system to model customer online buying behavior are not the same as those used to justify a replacement of the general accounting system. Equally, response to a competitor's online service, which is causing customer attrition, and a decision to bring together data from disparate applications in a data warehouse require different approaches to evaluation. The risks and consequences of failure in the various segments are also different. This can be allowed for by requiring a higher predicted rate of return where the risk is higher, although this may in turn merely lead to creative accounting for the benefits. It is perhaps better to analyze the inherent nature of the risks and take appropriate action to deal with them, as far as possible, as will be outlined later.

The portfolio approach suggests that:

- ❖ Quantified, financial justification of applications is easier in the key operational and support quadrants, where most aspects of the application will be better known or can be determined, risks are lower and the rate of change is slower.
- ❖ A singular approach to investment justification will tend to produce one type of application to the exclusion of others. This argument is particularly strong where a scarce resource approach has been adopted and pure financial return on investment decides investment priorities—support applications will always be easier to justify financially.
- ❖ The way in which applications are planned and managed by the organization will also affect the way in which they are justified— whether they are customer- related applications integral to achieving business objectives or systems intended to save major costs in one part of the organization.

#### **SELF CHECK EXERCISE- I**

1. Substitutive technology primarily aims to improve efficiency through the replacement of people. What is the main driving force behind this implementation?
2. What type of analysis is mentioned that evaluates efficiency improvements in organizational processes resulting from automation?

#### **Support Applications**

The main argument for such systems is improving efficiency, which should be possible to quantify and convert into a financial argument for investment. Additional arguments may revolve around system and technology obsolescence and general staff productivity/ time saving, and these may be difficult to identify accurately and therefore to quantify. In this segment, it is reasonable to expect potential benefits to be estimated before resources and costs are incurred to identify the most economical solution within the benefits achievable.

Again, if the application is competing with others for the limited resource, then a support application must show a good economic return for the allocation of a scarce resource. If, however, the project can be carried out within the user department's control,

then it is reasonable that, since the budget or funding is under local control, the 'go-no go' decision is made by local user management. The IS/IT investment is an alternative use of funds to other investments locally and

STRATEGIC	HIGH POTENTIAL
Enable the achievement of <i>business objectives</i> via explicit critical success y factors	R&D project to explore potential value and cost - fund from R&D budget  £ Risk money
Disadvantage/Risk if it is not done ( <i>critical failure factors</i> )  and/or quantified performance improvement	Net cost reduction through <i>quantified savings</i>
KEY OPERATIONAL	SUPPORT

£ extent to which benefits can be justified financially

Figure Investment justification is not competing with alternative use of scarce IS/IT resources. It is to be hoped that user management will expect the case to be argued in predominantly financial terms, but if not, that is their responsibility.

In summary, assuming a scarce resource strategy is being adopted centrally for most support applications, then any allocation of that resource should be argued on economic, return-on-investment grounds primarily. At the same time, some discretion can, without great risk, be left to local management via a free-market strategy.

While, as far as possible, all costs and benefits of a new development, redevelopment or major enhancement to a key operational system should be converted to a financial evaluation, this may not allow for all the arguments involved.

For support systems, it was suggested that benefits should be estimated before any resource is allocated or costs determined. This is inappropriate for key operational applications, where financial benefits are not the only driving force. The most economic

solution in the short term may not be the most effective over the long term given the role such applications play in the core business processes. This is the area for 'strict feasibility study' to find the best solution from a range of alternatives, each with differing costs, benefits and risks.

The business may suffer a serious disadvantage if a system fails or becomes less adequate in meeting the business needs as they evolve. It might be worth spending more to achieve a more adaptable or integrated solution that meets a range of needs more effectively and upon which new strategic applications can be built. Normally, this will increase the cost and make the overall benefits difficult to express financially. Some of those additional benefits will be able to be related to critical success factors (CSFs), which provide a clear link of the investment to the achievement of business objectives. An argument often used is "what will happen to the business if we do not invest in improving this key- operational system?" and therefore 'can we afford the risk of not doing it Perhaps the term 'critical failure factor' is more appropriate when considering the possible disadvantages of not investing.

The implementation strategy that works best for key operational systems is monopoly, which implies a central control and vetting of all applications and enhancements. This enables a standard checklist of questions to be considered in the evaluation of any new project.

Factors that are important (other than economic return) from either a business or IS/IT perspective can be allowed for and, if necessary, changed over time. The monopoly approach should also avoid implementing solutions based solely on economic expediency rather than business benefits, although it may mean that a particular application may cost more in the short term.

In conclusion, it should be stressed that, for key operational systems, the business unit management should be the final arbiter. It is their business that will suffer by lack of investment and they should (provided they can afford to pay) be allocated the necessary resource to meet such system's needs. It is clearly untenable to allow competitive disadvantages to develop due to lack of investment in IS/IT.

### **Strategic Applications**

The fact that an application is deemed strategic implies that it is integral to achieving aspects of the future business strategy. Obviously, it is important to cost the investment and, where possible, put figures to the potential benefits, even if the latter are only ranges or orders of magnitude, not estimates suitable for a discounted cash-flow calculation. However, the main reasons for proceeding are likely to remain mainly non-financial expressed as the business opportunity that is being created or the CSFs that the application specifically addresses.

The strategy most appropriate for this part of the matrix is central planning, whereby IS/IT opportunities and threats are being considered along with the business issues and strategies. Hence, an application will get the 'go-no go' decision based on how directly it relates to the business objectives and particular strategies. The benefits will derive from achieving those objectives by enabling the required business changes, not from the system alone. Whether this will actually happen is partly a question of luck (that the target does

not move), partly of judgement (the quality of business acumen of senior managers) and partly good management of the application development and associated business changes.

A key issue is whether the management team, steering group or whoever makes such decisions are unified in endorsing the project and that the 'organization' deems the investment worthwhile. The critical factor is then resourcing the task sufficiently to achieve the objectives in the optimum timescale. This may need repeated senior management intervention to ensure that both user and IT resources are made available. The budget for such investments and financial control of actual expenditure should perhaps reside with the steering group to ensure that progress and resourcing are centrally monitored as well as planned.

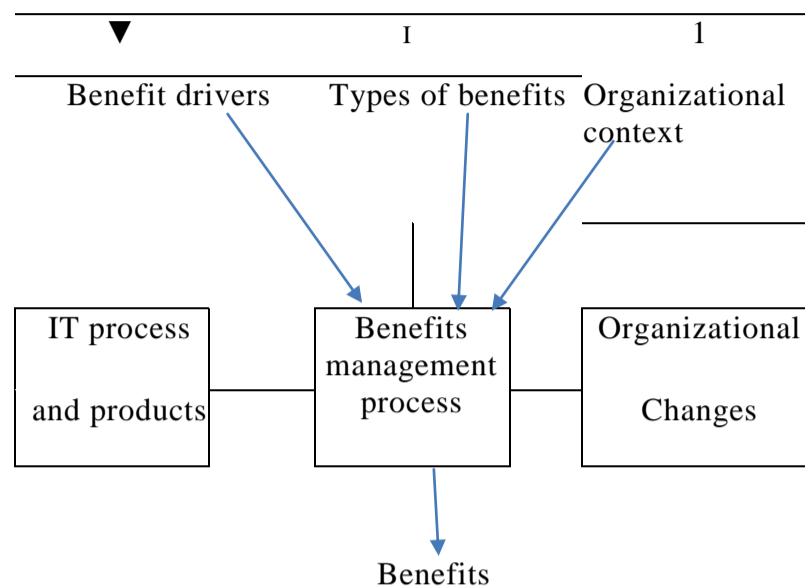
The very essence of high potential projects is that the benefits are unknown and the objective is to identify the benefits potentially available and how they could be achieved. It should be justified on the same basis as any other type of R&D, and preferably from a general R&D budget rather than IS/IT funds. In practice, where the money comes from - R&D budget or IS/IT or user budgets—is important, but not critical. What does matter is not pouring money down the seemingly bottomless pit that R&D can become, if not properly monitored. It must be remembered that many high potential ideas tend to arise informally, based on individuals' creative thinking, rather than from formal planning. However, many of the ideas simply will not work and some control is essential to avoid significant waste of resources. It can be argued that many e-commerce/e-business investments in 2000-2001 could have benefited from better evaluation of their potential, before large sums were spent on IT implementations that were based on incorrect assumptions and little, if any, objective assessment of their potential value. The idea of 'product champions' to be responsible for such projects, given a budget against agreed general terms of reference to deliver results or otherwise, is the most effective way of initiating and managing the high potential stage in application life cycles. No investment should stay in this segment for too long or have too much money spent on it. When initial allocations are used up, further sums have to be justified based on the evidence of the possible benefits, not just allocated in the vague hope of eventual success.

This approach fits the leading-edge and free-market strategies for the experimentation and assessment that high potential applications need. However, it should be obvious that those responsible for ensuring that central planning works for strategic applications must be aware of what is being evaluated in the high potential segment and by whom and over what timescale.

The above approaches to application justification in the various segments may lack the precision ideally required. But this is no more than is true of other investments in research and development, advertising, reorganization, building new plant or facilities, or launching new products and services. IS/IT investments should be considered just as objectively and just as subjectively as other business investments. The portfolio approach allows the balance to vary according to the expected contribution required.

## **5.2 THE BENEFITS MANAGEMENT PROCESS**

In considering the activities required to manage the delivery of benefits, it has been assumed that the IT-based system is delivered to specification



(i.e. the technical part of the development is successful). However, as the benefits management process proceeds, it may cause revision to the specification, and it is assumed that effective change control processes can deal with this. The other related set of activities are organizational changes of many types that have to be made to deliver the benefits. The benefits management process should be the driving mechanism for these change activities. How to bring them about in detail is addressed in the wealth of change management and organizational development literature.

#### **Stage 1: Identification and Structuring of Benefits**

Based on the outcome of the strategy processes, the overall business rationale for a new or improved system will have been identified: the nature of the types of targets, benefit and extent of change involved to obtain them will depend on their impact and criticality for the business strategy which in turn determines whether the system is strategic, key operational or support

#### **Stage 2: Planning Benefits Realization**

Having identified and allocated responsibility for benefits to individuals (or perhaps teams), the next step is to determine the changes required for delivery of each benefit and how the IS/IT development will enable the changes and benefits to occur.

#### **Stage 3: Executing the Benefits Plan**

As with any plan, the next stage is to carry it out and adjust; it as necessary, as issues arise affecting its achievement. Monitoring progress against the activities and deliverables of the benefits plan is just as important as for the IS/IT development plan, and the two plans are components of the overall project plan. It may be necessary to establish interim targets and measures to evaluate progress toward key milestones or the final implementation. It is the business project manager's responsibility to decide what action to take in terms of reviewing the scope and specification of the system or its business justification. During this stage, further benefits may also be identified, and again the business project manager should decide on appropriate action to plan for the benefit or defer it until Stage 5.

#### **Stage 4: Reviewing and Evaluating Results**

Once the new system, business changes and the benefits plan have been implemented, there must be a formal review of what was and was not achieved. This evaluation has two purposes:

- ❖ to maximize the benefits of the particular investment;
- ❖ to learn how to improve benefits delivery from future investments.

### **Stage 5: Potential for Further Benefits**

Further benefits often become apparent only when the system has been running for some time and the associated business changes have been made. If, as has been suggested, more benefits are actually identifiable after the event than before it, where there is no review process these will probably never be identified.

Therefore, having reviewed what has happened, it is equally important to consider what further improvement could now be possible as a result of implementing the system and associated changes. This should be a creative process similar to Stage I, involving the original stakeholders and any others who may be able to contribute, based on the knowledge now available for new opportunities to be identified and fed into the first stage of a new iteration of the process. If this is not done, many available benefits may be overlooked. Its maximum value is to be gained from the overall investment in IT, benefit identification should be a continuing process, from which IS/IT projects are defined. Often, in the past, the project was defined first then benefits were 'created' in order to justify the cost. IS/IT planning should be driven by the delivery of a benefit stream that improves business performance at the optimum manageable rate.

#### **SELF CHECK EXERCISE- II**

3. What is the first step in the Benefit management process?

### **5.3 SUMMARY**

This chapter discusses the evaluation and justification of Information Systems/Information Technology (IS/IT) investments. It emphasizes the need for consistent rules and practices in assessing these investments, considering factors such as the nature of applications, resource constraints, and the potential return on investment. The portfolio approach is suggested as a framework for making investment decisions based on the nature of applications—key operational, support, and strategic. It explores how benefits should be managed through different stages, from identification to realization, review, and consideration of further benefits.

### **5.4 KEYWORDS**

**Information system Investment, Benefit Management, Benefit Analysis.**

### **5.5 REVIEW QUESTIONS**

#### **5.5.1 SHORT QUESTIONS**

1. Explain the portfolio approach to IS/IT investments.
2. How do IS/IT investments compete with alternative investments in an organization?
3. How does Parker describe the role of substitutive technology in improving efficiency, and what is identified as the main driving force behind its implementation?

#### **5.5.2 LONG QUESTIONS**

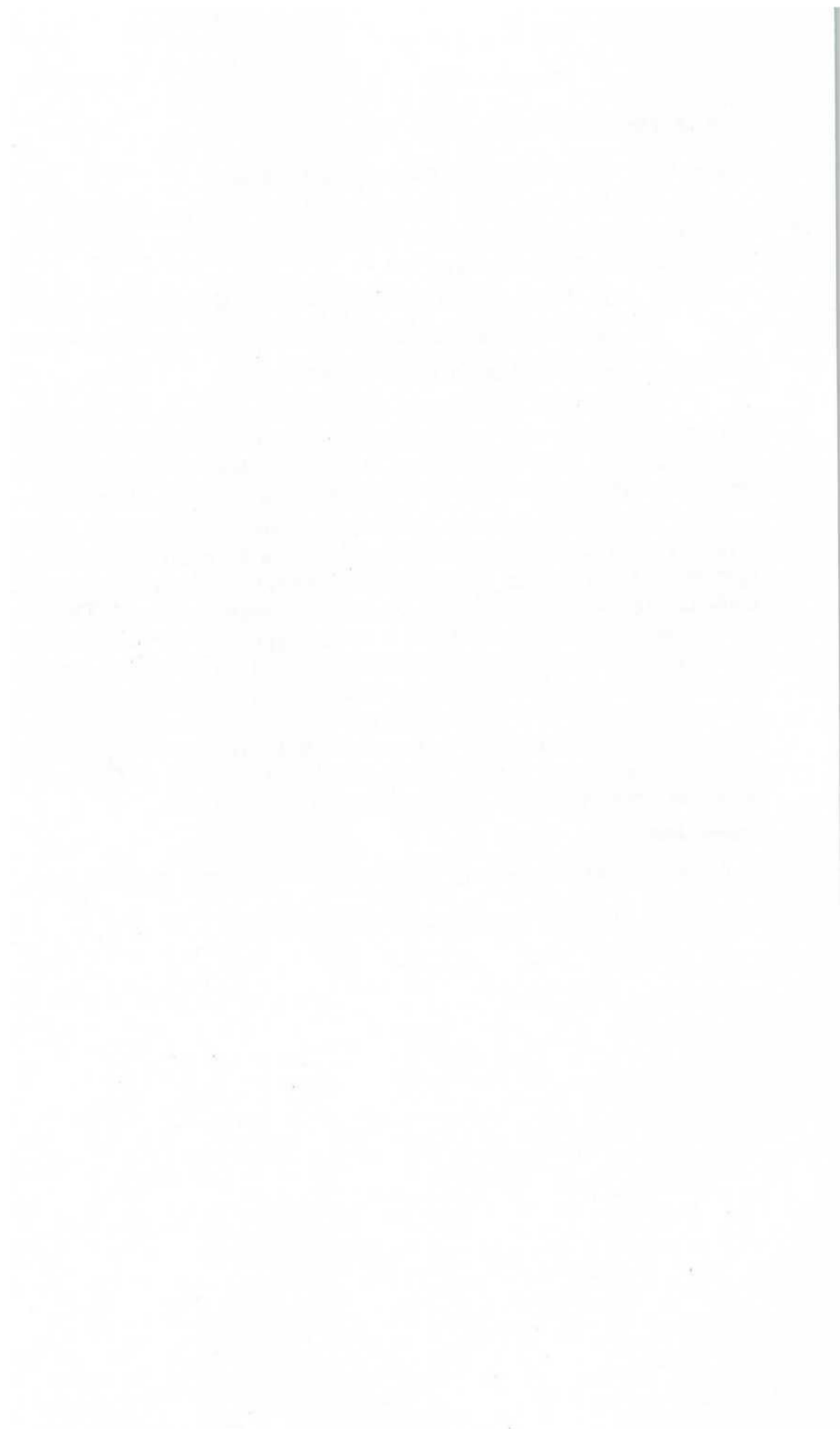
1. Elaborate on the portfolio approach and how it aids in making investment decisions for IS/IT applications.
2. What are the key stages in the benefits management process, and why is it crucial for realizing the potential of IS/IT investments?

### **5.6 ANSWERS TO SELF CHECK EXERCISE**

1. Economics
2. Traditional
3. Identification and Structuring of Benefits

### **5.7 SUGGESTED READINGS**

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gorden Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar





**GENERIC APPLICATION MANAGEMENT STRATEGIES STRUCTURE**

- 6.0 Objectives
- 6.1 Generic Application Management Strategies
  - 6.1(A) Centrally Planned
  - 6.1(B) Leading Edge
  - 6.1(C) Free Market
  - 6.1(D) Monopoly
  - 6.1(E) Scarce Resources
- 6.2 Relating Approaches to is Strategy Formulation
- 6.3 Portfolio Management Principles
- 6.4 Managing Application Portfolios
- 6.5 Summary
- 6.6 Keywords
- 6.7 Review Questions
  - 6.7.1 Short Questions
  - 6.7.2 Long Questions
- 6.8 Answers to Self-Check Exercise
- 6.9 Suggested Readings

**6.0OBJECTIVES**

After reading this lesson, students would be able to answer

- ❖ Generic Business Strategy
- ❖ Approaches to is strategy formulation
- ❖ Portfolio management principles
- ❖ Managing application portfolios

**6.1GENERIC APPLICATION MANAGEMENT STRATEGIES**

Given the variety of factors electing success in the different segments and the business consequences of success or failure, no single implementation approach is likely to deal electively with the range of issues involved. Equally, adopting a unique approach to each and every new development will lead to a degree of chaos and probably result in as many failures as successes. A limited set that meets the majority of requirements and is well understood throughout the organization is more likely to enable the best approach to be selected in each instance and increase the chances of success.

Based on extensive observation of the realities of IS/IT management processes in many organizations, Parsons described five strategies that are prevalent as the means by which organizations link the management of IS/IT to the corporate or business management processes.

	Centrally planned	Leading edge	Free market	Monopoly	Scarce resource
Management rationale	Central all requirements	Technology can business advantages and risks are worth	Market makes the decisions and users are responsible for	Information is a corporate good	Information is a resource and its development must
Organizational Requirement	Knowledgeable Involved senior management	Commitment of and resources	Knowledgeable user Account-ability for IS/IT at business	User acceptance the philosophy	Tight budgetary control of all
IT role	Integrated provide services to match the	Innovative IS/IT management Push forward boundaries of technology use	Competitive and probably profit center-intended	Policies to force through single to satisfy users requirements Underset and present them	IS/it expenses policies for make the best use of a limited resource by tight cost Identify and cost projects
Line managers	Identify the business	Use the technology identify the advantages	Identify, source and control IS/IT developments	To central utility	Passive unless

### **6.1(a) CENTRALLY PLANNED**

This generic strategy implies that senior and executive management need to be fully aware of the development, due to its potential impact on the future business strategy. It is therefore most appropriate for strategic systems. Ensuring success in such circumstances demands the attention of senior management, to ensure that the objectives are met and that the necessary resources are applied to deliver the solution in the time required. Most strategic developments are likely to span a number of business areas, and, while the nature of the system can often be easily defined in outline, it will be its uniqueness and its close fit to the business strategy that will deliver the business advantages. To gain those advantages, it is almost inevitable that changes to business practices and even organization structure will be necessary.

To meet all these requirements, a 'task force' approach is best suited. Led by a senior business manager, the team will need dedicated, preferably full-time, high-quality business resources, which have excellent knowledge of the areas affected and the authority to agree to business changes.

### **6.1(b) LEADING EDGE**

With this strategy, the senior management of the organization believes that, by adopting information technology that is 'leading edge' in the context of its industry, it should be able to gain some business advantage. It follows that they must be willing to fund some experimentation to evaluate technologies and ideas and accept that not all of the evaluations will succeed. While the new technologies may be identified by IT specialists, the evaluation should be in relation to some potential business idea or need and carried out in conjunction with the business. The objective is not to understand the technology for its own sake. Alternatively, the lead may come from the business, through seeing a technology in use elsewhere that may be potentially applicable for the organization. While that business 'vision' may be appropriate, IT specialists need to be involved in the evaluation, to provide an objective assessment of the capabilities of the technology and determine the longer-term implications to the organization of adopting a particular technology. This is essential, to counter-balance the often-enthusiastic business user who has fallen prey to the persuasive pitch of a professional IT salesperson.

### **6.1(c) FREE MARKET**

The strategy that follows is 'monopoly' and, before considering the free market strategy in more detail, it is worth clarifying the key differences between the two in terms of the decision-making roles of the three parties involved.

The philosophy behind the free-market approach is that line managers are accountable for the performance of the business activities within their area of responsibility.

### **6.1(d) MONOPOLY**

In many ways, monopoly is the opposite of free market, whereby the influence of the centralized IT management of supply options will standardize on solutions, to provide integration of data and systems and also to control the cost of technology to the organization. This may well mean that the most expedient and perhaps ideal solution in each case has to be compromised to enable the long-term best set of solutions for the organization to be achieved, at an acceptable overall cost. Each functional manager will

not necessarily achieve the most cost-effective or timely satisfaction of his or her needs. This may cause resentment, unless there is a general understanding of how the various systems of the organizations interrelate across the functional areas. Often, this is because the IT monopoly has exceeded its brief and is setting priorities for what is done (probably because no one else will!), rather than optimizing how best to achieve all that needs to be done. Senior management must set the priorities to make best business use of the IT resource available or, if that is unsatisfactory to line managers, increase the size of the resource.

The positive attributes of the monopoly strategy are that, if it is well directed in terms of business priorities and if users are competent in specifying their needs, high quality, integrated, maintainable systems are procured or developed and then supported in an overall cost-effective way. This is what is required for key operational systems, where a low-risk, controlled approach to the development process is essential to avoid systems failure and consequent disadvantage. The monopoly strategy can be adopted for support systems, but may produce relatively high-cost solutions where cheaper, less comprehensive options would have sufficed.

#### **1.6(e) SCARCE RESOURCE**

This is essentially a financial strategy that controls the spend on IT through a budget limitation, within which those investments that provide the greatest return for the spend will get priority. Each investment should be financially justified and the most cost-effective solution to deliver economic benefits should be selected. Expenses are then tightly controlled against the agreed budget to ensure that the maximum net financial benefit is delivered. This approach tends to promote local specific solutions to meet local needs, and militates against flexible or integrated solutions, which will always be more expensive. The emphasis on purely economically-justified use of IT is very appropriate for support applications, and may produce effective key operational systems in the short term but at the expense of longer-term opportunities derived from integration. It does not encourage innovative or speculative (i.e. high potential) uses of IT, and precludes many strategic investments due to the demand for quantified financial benefits to be detailed in advance. However, a limited budget for research and development (R&D) or high potential activities, allocated from the center to innovative ideas, is a version of scarce resourcing to reduce overall R&D risks.

### **5.1 RELATING APPROACHES TO IS STRATEGY FORMULATION AND THE GENERIC**

#### **IMPLEMENTATION STRATEGIES**

Although the two concepts of 'planning approaches' and 'generic strategies' are derived from different sources, there are some clear connections that can be drawn, and the evolution of the generic strategies used in many organizations can be reconciled with the development of IS/IT planning described by Earl. The correlation is not perfect and there are some anomalies;

In terms of the evolution of IS strategic management many organizations develop or evolve their mix of planning and implementation strategies in the following way (see Figure below):

- ❖ Stage 1—no coherent strategy—a mix of free market, monopoly and scarce

resource—which is likely given the ‘bottom-up’<sup>5</sup> process, and the only planning is of technology supply,

- ❖ Stage 2—a monopolistic strategy tends to prevail, linked to the need for structure and integration related to the method driven planning used to avoid systems ineffectiveness.
- ❖ Stage 3—a combination of monopoly and scarce resourcing is common to provide the necessary controls of implementation processes and costs in line with the emphasis on the budget (administrative led).

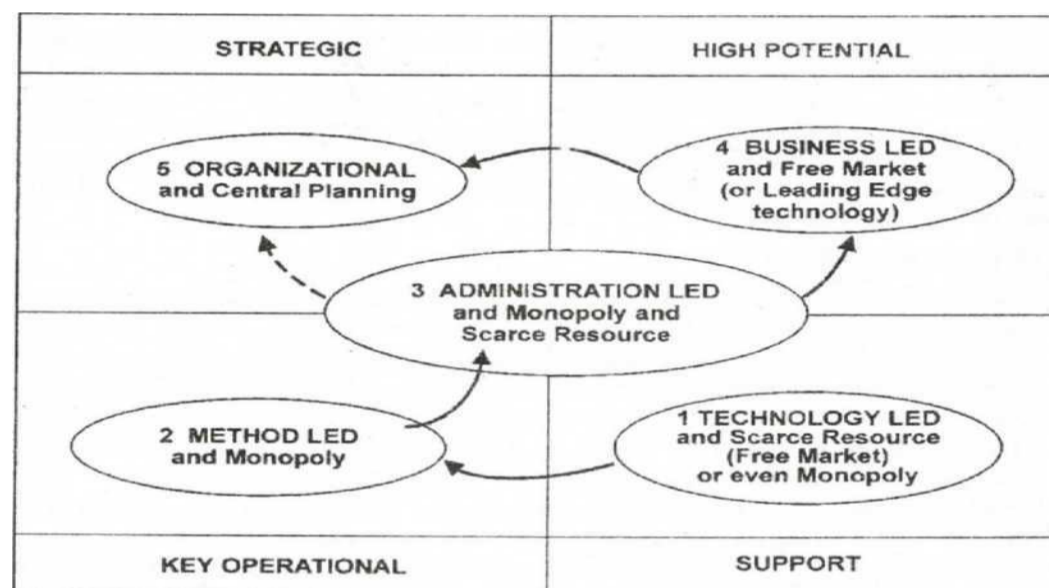


Figure Portfolios, planning and generic strategies evolution

- ❖ Stage 4—users pursuing localized opportunities opens up free market activities in addition—which should be based on business led planning, in terms of local functional priorities. Alternatively, emerging new technologies provide the opportunity to innovate in creating new business processes or radically change existing ways of working. Linking the technology to a genuine business need is the first step in determining the benefits of adopting the technology.
- ❖ Stage 5—the use of the centrally planned strategy occurs for the implementation of strategic applications, as the organization identifies the links between its strategic themes and the role of IS/IT.

Those who succeed in the longer term are those who can understand, accommodate and use the required mixture of planning approaches and implementation strategies most effectively.

#### SELF CHECK EXERCISE- I

1. Name the five strategies described by Parsons, to link the management of IS/IT to corporate or business management processes.
2. What is the first stage in evolution of IS strategic management?

**PORTFOLIO MANAGEMENT PRINCIPLES APPLIED TO THE APPLICATIONS PORTFOLIO**

STRATEGIC ( <i>STARS</i> )	HIGH POTENTIAL ( <i>WILDCATS</i> )
- Continuous innovation  - Vertical integration  - High value-added	- Process research and design  - Minimal integration  - Cost control
- Defensive innovation  - Effective resource utilization  - High quality	* Disinvest/Rationalize  - Efficiency  - Sustained quality
KEY OPERATIONAL ( <i>CASH COWS</i> )	SUPPORT ( <i>DOGS</i> )

Figure The business/systems portfolio matrix

**HIGH POTENTIAL (WILDCATS)**

IS/IT high potential applications resemble wildcat products due to the degree of uncertainty of success—the amount of risk they involve. Many will fail. Identifying and then transforming the successes into the next phase of the life cycle is the objective. This implies dealing effectively with the failures and not pouring good money ana' resources after bad.

**STRATEGIC (STARS)**

A star product or strategic application is one that the company is dependent upon for future success in a competitive, changing marketplace, where any advantage gained can be expected to be eroded quickly. The value of the application can only be judged by its effectiveness vis-a'-vis competitors. Using the Internet to link customers directly into an organization's order-taking systems will only work if it is of value to the customer—a judgement that the firm can influence, but the customer will make. This process of value-adding is expensive and resource intensive and is only justified where IS/IT can change the business performance to gain a specific, sustainable advantage. As the rest of the industry catches up, diminishing returns will result from adding further value and greater returns can be obtained by reducing the cost of matching performance to industry norms.

**KEY OPERATIONAL (CASH COWS)**

As with its cash cows, an organization expects its key operational systems to make a significant and lasting contribution to the business. This depends on keeping the product

or system in line with current market and business demands in the most cost-effective

The overall approach to managing key operational systems is to reduce costs while sustaining the business value derived from the use of the system. Integration of systems and resources with other applications will provide this net gain.

**SUPPORT (DOGS)**

Support systems, like dog products, are not critical to an organization's future, unless they waste valuable resources or the marketplace changes unexpectedly. Some of the key issues described above that have to be considered as an application migrates around the portfolio.

**SELF CHECK EXERCISE- II**

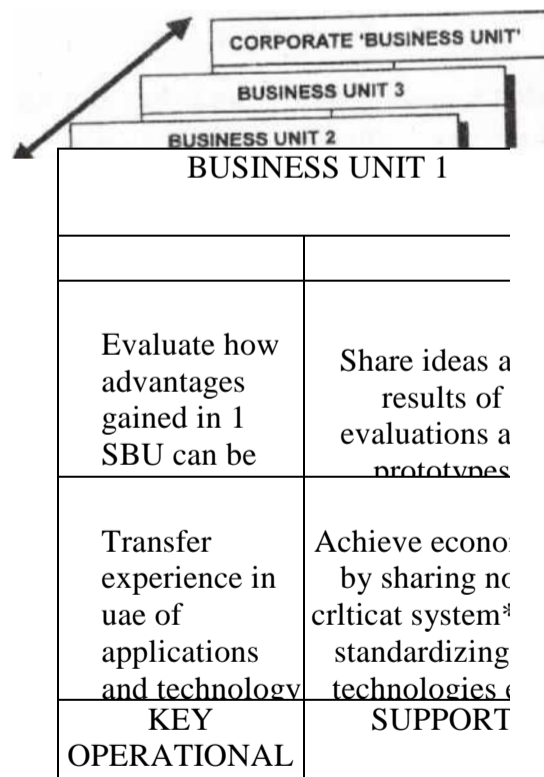
3. Acc to Business portfolio Matrix on which product the company can be dependent for future success in a competitive marketplace.

**5.2 MANAGING APPLICATION PORTFOLIOS IN MULTI-UNIT ORGANIZATION^**

Once IS strategies for each business unit can be expressed in terms of the application portfolio, it becomes easier to identify possible mutual benefits across the organization, by taking advantage of successful innovations as well as meeting similar needs more economically. Figure

Below depicts the minimum gains to be made by a coordinated approach across organization, when the applications portfolios are compared across business units.

In the support segment, even if the businesses are diverse, the likely to address similar administrative requirements, and packages are a common choice. At worst, a limited number of packages should be used; at best, a single, common suite of applications could be used. This will obviously depend on the diversity of the type of business. For example, manufacturing and financial services organizations will require different systems, but several types of retail companies in different market sectors could easily use common accounting systems. The same logic applies throughout the matrix but the benefits of commonality of actual applications are likely to decrease as we move from support to key operational to strategic, although in the strategic



quadrant benefits may be realizable through different implementations of the same idea. Transferring the knowledge gained from one organization to another may accelerate the development of strategic applications. This implies business-based sharing of how to achieve the benefits available, even if the details of the applications vary. Links to suppliers, for instance, are likely to achieve similar benefits to manufacturing and retail companies.

It could well be that, due to the different state of development of the different industries in which the units operate, a key operational system in one business could provide a competitive advantage in another. One company was able to transfer a system that was well established for managing consumer goods inventories and distribution to a chemical industry business. The approach was new to the chemical industry and enabled that unit to gain an advantage through better customer service

This kind of opportunity can only be identified if the existing and required future portfolios of the different businesses are compared, within the context of the competitive environments and strategies of those businesses. However, there is an inherent danger in this approach, if business units are 'forced' to accept systems from other units for largely economic reasons, without due recognition of their differing business situations, competitive priorities and organizational competencies.

The real objectives are to ensure that opportunities are not missed or that time, resources and funds are not needlessly wasted. This can only be achieved if a similar rationale has been used to define the portfolios. If the effort of the IS/IT strategy process is worthwhile, then additional work to build on or share ideas could yield significantly greater benefits and avoid considerable duplication of effort across the overall business.

There is consistency between the rationale for the degree of coordination advised for each segment with the planning and implementation approaches. The generic strategies can be used to summarize the actual or required relationship between the corporate body and the business units, and among those units. In a diversified conglomerate, evolving through acquisition and divestment of businesses, the corporate IS/IT generic strategy is likely to consist of a minimal centralized (monopolistic) component—perhaps financial control systems—with an otherwise free-market philosophy. This is appropriate to the business.

However, if the company is predominantly in one industry where synergy is a potential source of advantage, the business unit strategies are likely to be supplemented at a corporate level by some central planning of IS/IT applications and a monopolistic control over the ways of meeting key operational needs to avoid proliferation and incompatibility of solutions. Where the organization cannot benefit from vertical synergy, but it consists of like types of company (e.g. manufacturing, retail or financial services), similarity of functional requirements might be more effectively or economically satisfied' from a central utility (monopoly) or by 'monopolistic' management of outsourced supply, for those systems that are needed by many companies.

In Figure, the term constrain in the support segment implies corporate scarce resourcing for applications that are not unique in any of the units. Monopolistic control is suggested for key operational applications to reduce unnecessary diversity over time to enable both reduction in costs through effective resource use and to develop and sustain expertise in application operation and use. Capitalizing on strategic application success requires some (business) central planning across the units to determine whether and how the same benefits can accrue across the organization. Finally, when any corporate 'interference', however well intended, can stifle innovation in the units, sharing knowledge of new technology, its capabilities and limitations—by ensuring the results of R&D work is made available to others—could increase the speed of exploitation and reduce wasted effort. The communication facilitation is probably best established at the corporate Centre, via a 'bulletin board' or similar knowledge-sharing mechanism.

## **6.5 SUMMARY**

The chapter discusses generic application management strategies in the context of Information Systems (IS) and Information Technology (IT) management. It introduces five prevalent strategies: Centrally Planned, Leading Edge, Free Market, Monopoly, and Scarce Resource. Each strategy is associated with a specific management rationale, organizational requirements, IT role, and line manager involvement.

## **6.6 KEYWORDS**

**Generic Business Strategy, Portfolio Management**

## **6.7 REVIEW QUESTIONS**

### **6.7.1 SHORT QUESTIONS**

1. What is the management rationale behind the "Centrally Planned" generic strategy?
2. Explain the role of senior management in the "Leading Edge" strategy.
3. What are the stages of evolution in IS strategic management within organizations?

### **6.7.2 LONG QUESTIONS**

1. Compare and contrast the "Monopoly" and "Free Market" strategies, emphasizing their impact on decision-making roles and IT management.
2. Analyze the evolution of IS strategic management in organizations, highlighting the stages and potential mix of strategies employed.

## **6.8 ANSWER TO SELF CHECK EXERCISE**

1. Centrally planned, Leading edge, Free market, Monopoly, Scarce resources
2. Technology Led and Scarce Resources (Mix of Free market and monopoly)
3. Star products

## **6.9 SUGGESTED READINGS**

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar



Lesson No. 7 AUTHOR: SAHIL RAJ

### COMPETITIVE ADVANTAGE OF IS STRATEGY

#### STRUCTURE

- 7.0 Objectives
- 7.1 Competitive Advantage of is Strategy
  - 7.1(a) Organizing Strategies for IS/IT Management
  - 7.1(b) A Framework Guiding Action
- 7.2 Role of IS
  - 7.2(a) The Executives Steering Group
  - 7.2(b) Business Unit (or Functional) is Strategy Groups
  - 7.2(c) Application Management Groups
  - 7.2(d) It Strategy Group
- 7.3 Summary
- 7.4 Keywords
- 7.5 Review Questions
  - 7.5.1 Short Questions
  - 7.5.2 Long Questions
- 7.6 Answers to Self-Check Exercise
- 7.7 Suggested Readings

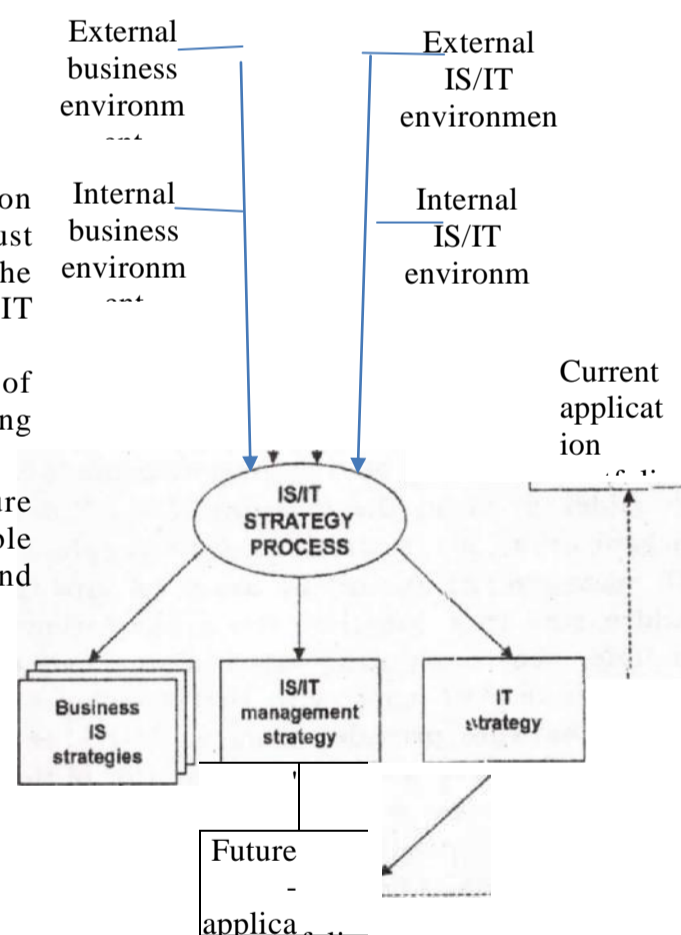
#### 7.0 OBJECTIVES

After reading this lesson, students would be able to answer  
Competitive advantage of IS strategy  
\* Role of IS

#### 7.1 COMPETITIVE ADVANTAGE OF IS STRATEGY

The formulation of strategy is only the first step on the road to successful IS/IT management. The strategy must be implemented, and delivering the results and updating the strategy to reflect changing business and IS/IT environments are obviously critical to eventual success. Failure to achieve the intended strategy is often the result of organizational, political and cultural issues being inadequately addressed.

The basic IS/IT strategy development model (Figure below) ignores explicit reference to the inevitable 'refinement' of strategy during planning and implementation, and its continuing adaptation



### **7.1(a) ORGANIZING STRATEGIES FOR IS/IT MANAGEMENT**

This section will consider not only aspects of overall organizational alternatives and the position of IS functions in the organization but also organizing options (structure and resource configuration), allocation of decision rights (centralization versus devolution) and resourcing strategies (both insourcing and outsourcing). While these depend on the approaches adopted for information, application and technology management, it is most critical that the IS function is organized to satisfy its 'customers' requirements as well as to manage itself effectively. And customers today are not necessarily located in the business, but can be actual customers (e.g. as with e-banking) and suppliers (e.g. as with e-supply chains).

In addition to defining organizational responsibilities concerning IS/IT management, corporate management also has to decide if and how that structure should be overlaid by other 'governing' processes such as committees or steering groups for coordination and control. Most large private sector and public bodies have realized that no one organizational alternative can achieve appropriate management of all aspects of IS/IT. However, in many of these organizations, the 'steering group' is seen as a failure, or at best an irrelevance, by both line management and IS managers, and even by some senior executives. Others, however, are very effective as mechanisms for developing a more concerted approach to the strategic management of IS/IT. The reasons for these differing realities will also be explored and an overall 'ideal' model for effective governance will be outlined.

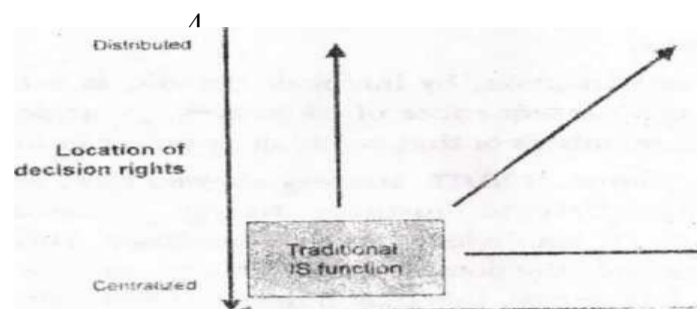
### **7.1(b) A FRAMEWORK GUIDING ACTION**

Before presenting a framework guiding action, it is first useful to consider the nature and content of IS/IT activities. The activities that are traditionally seen as necessary for 'IT', and consequently considered as taking place within the IS function, can be portrayed as delivering a range of services to the business. They range from the planning of the investment in IT to building applications, to installing and maintaining services, software and networks, to providing end-user support. These services can be categorized under four headings: strategy and planning, application development, application and technical services, and technology delivery and maintenance.

In deciding on the organization of IS/IT resources, two key issues must be considered. First, the location of IS/IT decision rights regarding IS/IT activity in the organization. What decisions, for example, should be centralized and what aspects of IS/IT management should be devolved into the business and out of the IS function? In addressing this question, the organization needs to define authority, responsibilities, policies, co-ordinating mechanisms and control procedures. The second aspect to consider is concerned with the sourcing of IS/IT resources. Traditionally, most IS/IT resources were provided from an in-house function under its direct control. However, today, there are a range of sourcing options open to the organization, and it is not necessary to provide all IS/IT resources from within the IS function,<sup>1</sup> Even if an IT activity is deemed business critical, it does not mean that all its elements have to be kept inhouse. This interorganizational arrangement places new stresses in the management of IS/IT resources.

### **SELF CHECK EXERCISE- I**

- 1.** What could be the possible factors in failure to achieve the intended strategy?
- 2.** What are the two key issues must be considered, in deciding on the organization of IS/IT resources.



Provisioning of IS resources

## 7.2 ROLE OF IS (COORDINATING MECHANISMS FOR THE STRATEGIC MANAGEMENT OF IS/IT)

The majority of organizations in both public and private sectors have established some form of 'steering group' and other coordinating mechanisms for IS/IT. They are called many things, but usually have the words 'policy', 'strategy' or 'planning' in the title. According to Earl, 'steering committees appear to be an obvious necessity in managing IT.'

Most writers agree that the reasons for establishing such committees are (one or more of):

- ❖ ensuring top management involvement in IS planning;
- ❖ ensuring the fit between IS and business strategy;
- ❖ improving communication with top and middle management
- ❖ changing user attitudes to IT.

A study showed that successful steering committees not only addressed each of them but also introduced a process of reaching decisions by **consensus**—something which can otherwise prove difficult with respect to IS and IT. Gupta and Raghunathan, based on a large survey in US companies, concluded that steering committees were one of the most effective ways of improving organizations' IS planning, by assisting the integration of the IS function with the business and by coordinating planning activities. Some other reasons for the establishment of such a grouping of senior managers focused on the management of IS/IT can be identified:

1. Kotter's organizational model was used to differentiate between formal and informal organizational arrangements. The formal organization structure reflects the way in which the business operates, whereas the 'dominant coalition' or informal structure essentially determines the future strategy of the organization. This implies that members of that coalition are scattered through the upper layers of the organizational structure, but are not necessarily the most senior and/or all from the senior management team. Some senior executives may be 'caretakers' or 'controllers' by nature rather than the 'developers' and entrepreneurs who drive things forward. It is important that the members of the 'dominant coalition' overtly include IS /IT on their agenda since:
  - ❖ they are, in practice, establishing business strategy and therefore will miss opportunities, etc. if they ignore IS/IT. They are in the best position to identify and evaluate the impact of IS/IT on the strategy;

- ❖ they, by their attitude and behavior towards IS/IT, are determining the role it plays in the business.

It means that the dominant coalition, by intent or default, is setting IS/IT strategy and needs to be aware of that and the consequences of its interest or neglect. Any steering group, therefore, must include the main members of that coalition or power group.

2. The model of the evolving nature of IS/IT strategy showed how, in the most mature stage when the objective is to link IS/IT to business strategy, a coalition approach of users, senior management and IS/IT staff needed to be established. This sounds very similar to the argument above but extends the potential franchise to users and IS/IT staff as well as the strategy formulators. In essence, this may imply that a steering or policy group is not enough to involve all necessary parties to the strategy process. This will be considered below.
3. A number of issues in portfolio management point to the need for strong coordination and a means of making decisions across the range of types of investment proposed and required. In particular, strategic applications, which are normally cross-functional, need executive management agreement and endorsement of the business benefits and commitment to the normally extensive change program needed to realize them.
4. Perhaps the most compelling reason is that the formal organization structures for IS/IT activities are never seen to be satisfactory by all the parties involved, and additional 'governing' processes become necessary, whether IT resources are centralized or decentralized. If IT resources are centralized, there is a need to assess and prioritize demand and set an appropriate resource level. If IT resources are decentralized there is a need to coordinate applications planning to ensure that incompatible, even disadvantageous, developments are not undertaken and that IT resources are employed where the greatest business benefit can be obtained.

These arguments perhaps explain the spread of steering groups during the past decade. Equally, some of the points made above may also explain why many of those groups fail to steer IS/IT in a beneficial or even consistent direction. Criticism of steering groups is often the only thing that users and IT can agree on, especially if they introduce delays, increase bureaucracy, fail to make decisions, etc.

The causes of these problems can probably be summarized into three major areas:

1. The wrong people are involved: the group does not include enough (if any) of the 'dominant coalition' to be willing or able to establish strategy. If the right people are involved, many of the other problems disappear—the 'agenda' will contain items of strategic value only and the less important will be dropped. Decisions can and will be made. Obviously, the credibility of the steering group depends on the respect others have for its members, the evident importance of the matters they address and the results of decisions made. One important point is that executive managers, asked to 'serve' in such a group, must not be made to feel 'incompetent' by being asked to discuss and decide on subjects beyond their area of knowledge. This generally occurs if the agenda is dominated by technology as opposed to business matters.
2. The activities of the steering group and the decisions taken have to be integrated with the overall strategy processes in the business. This implies both interpretation of business

objectives and key initiatives into IS/IT priorities and providing IS/IT input to the development of the strategy. Even in organizations with steering groups, many strategic initiatives are taken without thought for the implications on the existing IS/IT strategy, causing at least disruption and delay in delivering critical systems. Even worse, the initiatives may be counter to the current strategy and, in many cases, the initiative itself may need rethinking due to the detrimental effect it has on longer-term strategic development. 'Initiative overload' is a phrase commonly heard in recent years, and there appears to be real conflict between coherent strategic management and the plethora of initiatives, many of which—like bubbles—often 'fade and die'.

3. The group has no infrastructure to support it and carry out its actions, which, as agreed, become the strategy. This implies effective communication to and from the steering group among everyone who is involved in devising and implementing the strategy.

Using the strategic management model mentioned below the role of the steering group becomes a key part of the formal strategy process: to establish the strategic direction, aligned to the strategy.

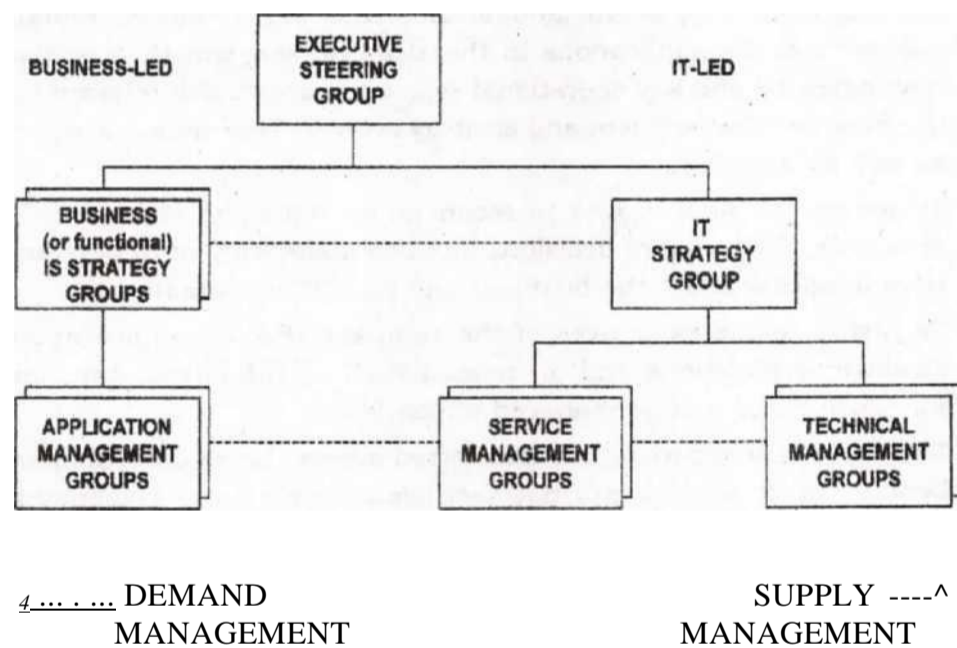


Figure Steering organization for IS/IT strategic management

### 7.2(a) THE EXECUTIVE STEERING GROUP

This group is as critical to the whole structure as the keystone is to an arch. Its membership should reflect the dominant coalition, which implies they are:

- ❖ able to recognize the potential of IS/IT in terms of the business strategy;
- ❖ keen to exploit IS/IT as a business weapon;
- ❖ able to influence the management of systems in the area of the business they represent;
- ❖ have the confidence of the executive to whom they report.

The steering group is a collection of people, not a collection of job roles. The individuals

are what matter, not the role they currently fulfil, but it is important that all areas of the business are represented. That includes the IT group, although it is critical that an IT person does not chair the group. Leadership must come from the business, preferably from the chief executive or a highly respected nominee.

The group should meet regularly, if not frequently—probably four to six times per year. The lower levels in the structure should get together more frequently—maybe even weekly when a critical application is being developed. The main purposes of the steering group are:

- ❖ To ensure that the overall objectives of strategic management of IS/IT, are addressed effectively. Most of those objectives are impossible to measure, require careful judgement and consensus agreement among senior management as to whether any particular decision made is appropriate to the situation and capable of implementation.
- ❖ To direct the activities of the strategy groups and require responses in due time, and to consider ideas and issues put forward by other groups.
- ❖ To address any issues that affect strategic applications and ensure their success is not jeopardized by organizational or resourcing problems. Equally, they need to ensure that the applications in the strategic segment (and related activity in the high potential and key operational segments) are all still relevant to the business as the business environment and strategy evolves. They must be willing to stop activity as well as initiate it.
- ❖ To act as the final judges to reconcile or settle the short-term contention for resources. Such urgent decisions must be made with an understanding of the long-term implications for the business and its IS/IT capability.
- ❖ To justify to the executives of the company that expenditures associated with strategic applications and on related R&D or infrastructure improvements are worthwhile and will be managed effectively.
- ❖ To ensure that experience is transferred across the organization, and that potential benefits of integration are not sacrificed merely for expediency in meeting local requirements.

It is not just what the steering group does that is important but also the way that it does it. Its process should be open, not secretive; its decisions should be communicated quickly and widely; it should demonstrate its willingness to consider ideas from the strategy groups that require such attention and it should be quick to redelegate trivial matters. They are all aspects of the 'IS/IT business culture' that must be established. Finally, it should ensure that successes are recognized as well as failures.

#### **7.2(b) BUSINESS UNIT (OR FUNCTIONAL) IS STRATEGY GROUPS**

Depending on the organization's structure, they may be established for each business unit or major function (or both if the organization consists of units and service functions). In a one-unit business, this role and the management steering group will clearly overlap.

Ideally, the representative of the business area on the executive steering group should chair the strategy process, although, equally ideally, business IS strategy should be part of the agenda for whatever business strategy process exists. Either way, the senior line managers involved in the business should be directly involved with the planning group.

While the obvious responsibilities include ensuring that business priorities and requirements are reflected in the planned application portfolio for the area, it is also this group's responsibility to ensure that the plans interrelate with plans in other areas and are understood by the IT strategy group. Where mismatches occur, problems should be resolved among the strategy groups, if at all possible, rather than be escalated to the executive steering group before alternatives can also be provided from which the best course of action can be chosen.

Having ensured that the application portfolio, priorities and plans reflect the business requirements, a number of other aspects must be addressed at this level:

- ❖ That appropriate approaches to development are adopted, given the classification of the application and the availability of central, local or external resources. Where the free-market philosophy is appropriate, the business IS strategy group may make the decision without consulting the IT specialists.
- ❖ The group must ensure that project justifications include: all relevant costs and benefits, and can be adequately resourced by the user areas concerned. Lack of availability of key user resources is often as much the cause of project delays as the availability of IT resources.
- ❖ The group must determine whether the portfolio is being developed to take maximum advantage of experience gained and investments already made in the area, and that the information resource is being managed effectively both locally and as part of the corporate resource.
- ❖ Implementation of systems will undoubtedly cause organizational change. Most major systems investments will need related organizational adjustments and even significant changes if benefits are to be realized, both within the business area impacted and at the boundaries with other functions. Understanding and suitable, coordinated and consistent, action needs to be established at this level as part of business planning. The group has the responsibility for ensuring that the expected benefits from the application plans are delivered.
- ❖ The group should establish appropriate application management groups for their own critical systems and developments, and ensure they are appropriately represented on such other groups on applications that affect the area. Those activities should be initiated, directed, responded to and in time even disbanded, by decisions at this level, unless the application is 'strategic' and cross-functional, when the decision belongs higher up.

It is clearly this group's responsibility to produce an IS strategy that converts business requirements into demand for applications, which are then managed to achieve the objectives identified. Establishing a coherent plan and associated resource and financial budgets are a key part of that process.

### **7.2(c) APPLICATION MANAGEMENT GROUPS**

Every major project, group of related systems or major operational systems will demand significant user management and staff time to ensure that it "works. During development, it is critical that it is 'business project managed' and not seen only as an 'IT project'. The users will have to live with the application's consequences. One of the commonest reasons why systems fail in a business sense is that the project manager was not a heavily committed, knowledgeable and able user. Every organization has learned this lesson, the hard way, over the past 30 years. The key objective of application management is to deliver the required business benefits from the application.

Establishing system and service requirements and monitoring achievement is a critical aspect of application management. Most such problems should be able to be resolved at this 'implementation' level unless they affect overall plans or resourcing. Then, the strategy group must become involved. Major existing systems, on which the area depends, and interrelated groups of systems, whether developed centrally or locally, require the same ongoing application management attention to ensure that they continue to fulfil requirements. Less time and effort should be devoted to support than to key operational or strategic applications unless the value of investment is significant. It is becoming increasingly frequent for many applications to cross organizational and/or planning group boundaries, and some, such as enterprise systems, may involve most parts of the organization. 'Application management' is required irrespective of planning structures, and applications that cross organizational boundaries and/or have multiple users are notoriously difficult to manage coherently. There is not a strict hierarchical relationship; an application management group may report to many masters and, should conflict be unresolved, the 'application' may have to become an issue on the executive steering group agenda.

### **SELF CHECK EXERCISE- II**

3. Name all the groups and sub-groups involved in Executive steering group.
4. How often the Executive steering group should meet?

#### **7.2(d) IT STRATEGY GROUP**

The IT limb of the structure consists of three parts. Overall resource and technology planning and development is the responsibility of the IT management team, but must also include or allow for resources not directly under its control. The head of the IS function should be a member of the management steering group, but in that role he or she is, first, a senior manager and, second, an IT professional.

An infrastructure is required to support the management team's planning and production of the 'IT strategy'. The IT strategy group should consist of the IT senior management team, if appropriate, senior user managers who control significant resources or technologies. This split of responsibility is common in 'high-tech' companies, where technological use of IT is separated from commercial application. This group will bring together the resource implications of application plans as well as determine the main aspects of technology development and capacity. Its primary purpose is to produce the 'supply-side' strategy that best satisfies the demand resulting from the IS strategy process. It should direct the activities of the service and technical groups, which are probably departments rather than 'committees', and should be responsible for determining the appropriate sources of supply for technology and other resources. One responsibility it must undertake is to interpret the implications of IS/IT developments and trends for the executive steering committee in relation to the business. Some advantage will accrue by being technically advanced, provided it can be exploited in business terms. What is important is to appreciate that close coordination along the implementation level, from business needs through service provision to technology acquisition, is just as vital to success as the effectiveness of the executive steering group. The quality of the relationship between user-biased application management and IT-biased service management groups will determine not only how well applications are managed during development but also whether the best application development approach is adopted in the first place. The ability of service and technical management groups to work together will determine whether technology is employed on the basis of what it does for the business, rather than just what it does! At the same time, the choice of the best technology within strategic and financial constraints will depend on the mutual understanding of these two groups. Technical specialists have a very important role in the organization, but they and business-orientated users often fail to communicate. The service groups are the interpreters in both directions, capable of understanding the languages of both business and technology'. People working in such service groups will often have a split loyalty to the business and technology.



### **7.3 SUMMARY**

The competitive advantage of Information Systems (IS) strategy lies not just in its formulation but also in successful implementation, result delivery, and continuous adaptation to changing business and IS/IT environments. Organizational, political, and cultural issues must be addressed to prevent failure. The IS/IT strategy development model should consider refinement during planning and implementation.

### **7.4 KEYWORDS**

**Competitive Advantage, Executive Steering Group**

### **7.5 REVIEW EXERCISES**

#### **7.5.1 SHORT QUESTIONS**

1. What are the potential reasons for failure to achieve an intended IS strategy?
2. What is the role of the steering group in IS/IT strategic management, and what challenges may it face?
3. How does the executive steering group contribute to the overall strategic direction of IS/IT?

#### **7.5.1 LONG QUESTIONS**

1. Discuss the importance of organizational structure and resource configuration in organizing strategies for IS/IT management.
2. Describe the responsibilities of the application management groups in ensuring the success of major projects and operational systems.

### **7.6 ANSWERS TO SELF CHECK EXERCISES**

1. Organizational, Political and Cultural factors.
2. The location of IS/IT decision rights regarding IS/IT activity in the organization and Sourcing of IS/IT resources.
3. **Business IS strategy group**- Application Management groups  
**IT Strategy groups**- Service Management groups  
-Technical Management groups.
4. Probably four to six times per year.

### **7.7 SUGGESTED READINGS**

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar



MBA-CC (Second  
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Semester-IV

SIS (424)

STRATEGIC INFORMATION  
SYSTEMS  
AUTHOR: - SAHIL RAJ

### ANALYTICAL TOOLS IN STRATEGIC MANAGEMENT

#### STRUCTURE

- 8.0 Objectives
- 8.1 Analytical Tools in Strategic Management
  - 8.1(A) Approaches to is Strategy Development
  - 8.1(B) Problems and Barriers
- 8.2 Strategic Thrust
  - 8.2(A) Establishing an is Strategy Process
  - 8.2(B) A Learning Process
  - 8.2(C) Initiating the Strategy Cycle
  - 8.2(D) Establishing Success Criteria
- 8.3 Review questions
- 8.4 suggested reading
- 8.5 solutions to self check exercise

#### 8.0 OBJECTIVES

After reading this lesson, students would be able to answer

Analytical tools

\* Strategic Thrust

#### 81 ANALYTICAL TOOLS IN STRATEGIC MANAGEMENT:

Developing an IS/IT strategy is taken to mean thinking strategically and planning for the effective long-term management and optimal impact of information in all its forms: information systems (IS) and information technology (IT) incorporating manual and computer systems, compute technology and telecommunications. It also includes organizational aspects of the management of IS/IT.

#### THE EVOLUTION OF THE IS/IT STRATEGY PROCESS: FROM TECHNOLOGY FOCUS TO STRATEGIC FOCUS

Research has highlighted that, in many organizations, approaches to IS strategy formulation have tended to follow an evolutionary process. In Stage 1, the focus is on planning to deliver technology. At Stage 5, the organization has reached a stage of maturity where the emphasis is on assessing the competitive impact of IS/IT and in ensuring the alignment between business strategies and IS/IT investments. This evolution can be explained as follows:

- \* Stage 1—typical early data processing (DP) planning—the IT department need to plan
- \*i\* Stage 2 management, now aware (often because of some crisis or key system failure), initiate a top-down review of IS/IT applications in the light of business dependence priorities are agreed based on the relative importance of business needs. For example, should the order processing redevelopment take precedence over the new sales

analysis system? The approaches used are very methodological, normally based on derivatives of IBM's Business Systems Planning' or similar methodologies, and involve gaining a management consensus of criticalities and priorities. An extended, prioritized 'shopping list' of key operational type applications for both operational and management information requirements will generally result.

Stage 3-the next stage is centred around detailed IS/IT planning, to determine the best way of implementing the applications and supporting technologies or, in some cases, reimplementing existing systems in more appropriate, integrated and perhaps less costly ways. The portfolio needs to be better balanced-greater attention is paid to the now (perceived to be critical) key operational systems and less resource is dedicated to support applications, each having been 'prioritized' in Stage 2. An 'Application Support Centre' or Help desk' concept may be implemented for support-type systems, and application packages will probably be introduced to rationalize and replace internally-developed systems. Stage 3 can take considerable time to implement effectively and, while this is going on, nothing else can really happen, since all IT resources are budgeted against a known detailed 2-3-year plan. Through Stages 1 to 3, the evolution from isolated 'efficiency'-driven applications to integrated 'effectiveness' systems has been occurring—but the objective has not yet been overt use of IS/IT for competitive advantage; the main purpose is to stop IS/IT being problematic and to ensure that it is causing no disadvantages.

Stage 4-the users take the reins, not necessarily encouraged by senior management, but not discouraged either, because they do not wish to prevent business-led, entrepreneurial use of IS/IT by users seeing new opportunities, using information in new ways to provide business leverage/competitive advantage. This may start during Stage 3 as frustration builds up in the 'jam tomorrow' stage of detailed planning and implementation. It is important that users, unfettered! in any way by IS/IT procedure or control, exercise this freedom to innovate, even if 90% of the ideas are of little strategic potential. It is the source of tested ideas that, with later IS/IT support, can be turned to advantage-literally, high potential opportunities driven by the business. Many strategic applications originate this way.

Stage 5 this is the difficult stage to reach, particularly if Stage 3 is delayed and Stage 4 is more user-rebellion than business stimulated innovation. It requires bringing it all back together—not just IS/IT-based strategy formulation as in Stage 2, but also the formulation of business strategy. In essence, the innovation ideas of Stage 4 require evaluation in the business context along with the opportunities now made available from the key operational infrastructure (i.e. the knowledge of what to do and the ability to deliver it effectively). Linking IS/IT potential to the business strategy is the main task, and this requires the simultaneous attention of senior executives, line management and IT specialists-the first time in this process that they have all acted as a coalition together. There is no 'methodology' available-multiple methods implies business strategizing and planning methods plus IS/IT top-down and bottom-up approaches. Strategic applications can be identified and agreed upon in the context of the business strategy.

The 'process' does not always occur sequentially in an organization, and there will always be overlap across the stages. In large organizations, different businesses or functions may be at

different stages in their evolution. What is surprising, in some ways, is how often the stages are followed quite sequentially as an organization gets more sophisticated in its application and deployment of IS/IT. All these variations on the IS/IT strategy process will be discussed in more detail later in the book, with special focus on the latter stages, which most organizations now have to address successfully.

**8.1(a) APPROACHES TO IS/IT STRATEGY DEVELOPMENT**

There is a difference between having an IS/IT strategy and having an IS/IT strategy that is closely aligned and integrated with the business strategy. Over the years, organizations have adopted a variety of approaches in planning IS/IT investments; unfortunately, these have not always resulted in the organization deploying IS/IT strategically. Earl has studied the changing focus and increasing maturity of the IS/IT strategy process in a number of organizations and has identified five main types of approach. The chief characteristics of these five types are adapted from Earl's more detailed assessment. The analysis considers the main task that is carried out, the main objectives, who drives the planning forward and the approaches adopted. By looking at each of these aspects, the effectiveness of the linkage between IS/IT strategy and business strategy can be determined, and consequently how likely the organization is to gain competitive advantage from IS/IT. This implies that, although an organization should develop more mature approach to IS/IT strategy formulation and planning in order to achieve a full and relevant portfolio, some earlier approaches need to be maintained in order to manage the total matrix of applications. In every application of IT needs all the complexity implied in Stage 5. However, one thing is certain, if the organization is poor at formulating business strategy, it will have considerable difficulty developing an IS/IT strategy.

An organization can identify from the types of planning approaches in place (i) where it is in relation to the eventual need for integration of IS/IT and business planning, and (ii) which approaches it needs to adopt in the short term to move it toward that eventual goal.

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Main task	IS/IT Defining	Detailed IS Strategic/Com petiti	Linkage to Key objective	Management
Agreeing priorities	Balancing	Pursuing	Integrating	Direction from IT led Senior User and IT Executives/Semior Coalition of Main approach
Bottom-up	Top-down	analysis	Balanced top-Entrepreneurial	Multiple Methods
Summary	Technology			Organization
'Method driven'	'Administrative'	'Business led'		

**8.1(b) PROBLEMS AND BARRIERS**

Despite an understanding of the importance of strategic planning for IS, in the past decade many organizations have developed perfectly sensible IS strategies that have been left to gather dust, or have been implemented in a half-hearted manner, because they did not have enough management commitment invested in them. These were not merely uplifted user wish hats that had been renamed 'strategies', nor IT-inspired total systems-information and technology architectures—that never deserved to gain business backing. Rather, they were derived from a thorough investigation of business needs and priorities, driven from business objectives, and constructed by business teams. They may have even obtained the soughwafter sign-off from the board, but were then left with the IS function to implement them, while management got on with its 'real' job of running the business.

The reasons for this,

Top management lacked awareness of the impact IS/IT is having generally and did not understand how IS/IT offered strategic advantages. They tended to see 'computers' in purely an operational context—  
still essentially a DP era view.

They perceived a credibility gap between the 'hype' of the IT industry as to what it can actually do and how easy it is to do it, given the difficulties their organization had had in delivering the claimed benefits.

3. Top managers did not view information as a business resource to be managed for long-term benefit. They only appreciated its criticality when they could not get what they needed.
4. Despite the difficulty in expressing all IS benefits in economic terms, top management still demand to see a financial justification for investments.
5. Finally, and an increasingly apparent problem today, is that top managers have become action orientated with a short-term focus that militates against putting much effort into long-term planning, especially of IS/IT, given the other issues above.

### SELF CHECK EXERCISE 1

1. What are the problem and barriers to IS/IT STRATEGY DEVELOPMENT

## 8.2 STRATEGIC THRUST

### THE CHALLENGES OF PLANNING STRATEGICALLY FOR IS/IT TODAY

The necessity to improve return on investments, coupled with the high risk potential of investing very substantial sums unwisely, have long been key objectives for developing a strategy for IS/IT. Prominent among them are the vast sums of money that organizations have spent on 'e-commerce' strategy that have, on average, delivered little business value to date. In addition, an ever-increasing number of examples, cited as demonstrating improved competitive success resulting from implementing computer and telecommunications systems, has also boosted awareness and interest. American Airlines, Merrill Lynch, American Hospital Supplies, Thomson's Holidays and several others were reported so extensively, in the 1980s and 1990s, that they have been elevated almost to legend status. More recently, the exploits of some organizations on the Internet such as Amazon.com, Lastminute.com, eBay.com and Betdaq.com, coupled with the media hype, has also raised awareness.

As the focus on delivering customer value and improving customer service becomes ever more critical for so many enterprises, and competitive, economic and regulatory pressures mount there is recognition by enlightened businesses that incremental and disconnected improvements are not good enough. There is also the growing recognition that delivering satisfactory performance is dependent on robust business processes. This is the environment in which gaining control of key processes has become a popular focus of attention, and many major change programs revolve around improving the performance of core business processes. In this environment, business process redesign gained a strong foothold, which continues today.

IS/IT strategy in today's competitive environment is not easy to achieve. By definition, it must be deeply embedded in business issues, since it promotes IS/IT as direct tools of competitive strategy. At the same time, it must continue to meet information processing and managerial information needs, but its primary orientation has turned from merely cost reduction to direct value adding; from mainly administrative efficiency and organizational efficiency to delivering competitive impact, both to gain advantage or avoid being disadvantaged. A key point is that its priorities are derived from business imperatives. Long-term benefits are sought business  
Native plan: to play in advancing business strategy.

There is no standard approach that can guarantee success. It would be fool-hardy to attempt to do so, since each situation is unique, warranting careful consideration, and requiring its own tailored approach. Rather, a framework and 'tool box' of techniques for IS/IT strategy formulation and planning are proposed that can be adapted to fit a wide spectrum of environments from the most to the least sophisticated, and which responds to the many external and internal, business and technical drivers.

#### **8.2(a) ESTABLISHING AN IS/IT STRATEGY PROCESS**

Once a strategic perspective on IS/IT is established and a strategy process is instituted, it should become a continuously evolving process, where the strategies and plans are refreshed regularly and even frequently, according to external forces, business needs and opportunities, the planning timetable, culture of the organization, and the benefits delivered by implementation of the strategy. Depending on the scope of the strategy process, the main deliverables, hard or soft, may be virtually unchanged or may be completely revised.

#### **8.2(b) A LEARNING PROCESS**

As well as being a continuous process, strategic IS planning is also a learning process. Both IS specialists and business people are becoming more aware of business and technology issues, and learning to identify and exploit opportunities within a cooperative environment. At best, the culture of partnership between the IS function and the rest of the organization reorientates itself to treat information, systems and technology as core resources in the day-to-day life of the business and its continuing development. This also takes place alongside a continuing evolution in the maturity of the IS function.

For the organization that does not have a strategic perspective on IS/IT and has not begun to develop an IS/IT strategy, there is an understandable problem in not knowing how to go about it. It is a far from trivial change to go from the tactical planning used to develop information systems based on catalogued users' demands—usually referred to as "wish lists"—or from technical infrastructure planning, to developing an IS/IT strategy closely aligned with the business strategy, especially since the outcome of such an approach is very likely to have far-reaching impacts on the future role of the IS/IT in the business and the role of the IS function.

When the move is from traditional developmental planning, focusing on technology delivery, to IS/IT strategy development, where the target applications portfolio is more balanced and where the emphasis is on future strategic importance, then several characteristics need to change. Typically, timescales for the planning horizon move out from one to two or more years, and development and provisioning plans are driven by current and future business needs rather than being incremental extensions from earlier developments or recorded backlog lists. Alternatively, the shift may not entail an extension of the planning horizon, but a radical change to achieve rapid strategic moves, where the focus is on flexibility, responsiveness and fast delivery.

#### **8.2(c) INITIATING THE STRATEGY CYCLE**

Before embarking on the development of an IS/IT strategy, whether for the first time or as part of a continuous strategic management process, there are many aspects to be considered, so that a clear brief and Terms of Reference (TOR) can be agreed for the planning activity, these will not be set in stone, but should give a sound foundation to build on. It is crucial that an adequate amount of time and effort is spent in the process of planning for planning, since the time spent here can determine whether 'success' is achievable. How to go forward depends on the maturity of

the process, particularly experiences to date, the starting point, the purpose of planning and the targets being sought, if they can be defined. It is also markedly affected by the issues and stimuli prompting the activity.

It should be re-emphasized that there is no one 'best' way to tackle strategy formulation and planning for IS/IT. It is essential to assess the situation and the needs carefully, and then to deploy the most appropriate people, methods and techniques to suit this context. Each organisation merits a different approach, which will vary according to its current circumstances, and the stimuli prompting the need for strategy development. Once the questions are answered, the TOR can be created and senior management's role in the process established—their active involvement is essential from the start, as it signals that 'strategy and planning' is actually going to happen.

#### **8.2(d) ESTABLISHING SUCCESS CRITERIA** \*

What is a good approach to IS/IT strategy development and how can success be ensured and measured? Assuredly, the impact of an IS/IT strategy is not instantaneous, and it may, in fact, take some time—often two or more years—between embarking on an IS/IT strategy formulation and planning process, for the first time, and demonstrating any significant impact on business practices and results. The outcome of strategizing and planning varies widely with:

- 4\* the starting point (how comprehensive or how constraining is the current application portfolio and how appropriate are IT supply services);
- + the opportunities (whether to search for some 'early winners'—easily-achieved, high-impact applications—or to build or acquire a portfolio of applications that meet the current and future business requirements);
- 4\* the degree to which top management is involved in and committed to the process;
- + the history of IT, particularly IS/IT success' in the organization.

These and other issues such as defining and implementing an appropriate relationship between the IS function and the business, and establishing objectives for IS/IT, have to be addressed.

At the outset, it is important to distinguish between IS/IT objectives and implementation issues. The objectives for an IS/IT strategy should not be concerned with object orientation, relational database technology, the Internet, HTML, hardware specification, or with end-user or central IT development. These are prominent implementation issues. Any objectives set for IS/IT must be similar to those for the business, focusing on, for example, improving customer service, enhancing productivity or providing the means for product differentiation.

At the same time as defining objectives for the strategy process, it is helpful to sharpen the perspective on these by establishing criteria for how success will be measured. Clearly, it is impossible to give a general set of success factors for any strategy process, as these will be (dictated by a number of factors including objectives, stimuli and perception of the business community. Establishing success criteria is likely to reveal any "hidden agenda" behind the stated TOR and objectives (e.g. understanding and meeting the expectations of executives, or 'achieving and maintaining credibility of the IS function in the business environment). They may also include one or two reminders to the strategy team (e.g. to avoid delving into too much detail at any point, or to keep the final product in mind). Once success criteria and measures are agreed, they can be reviewed regularly; at least, at every progress meeting, to ensure that they are being satisfied.

The primary objective of developing an IS strategy is to identify a value-added portfolio of



applications that will have a strategic impact on the organization and increase its performance. Yet, a key challenge is how to define and measure strategic impact and how to relate the approach to IS strategy formulation to organizational performance. There are a number of reasons that this is difficult, including the long lead time before benefits are realized, the intangible nature of certain benefits and different purposes for engaging in an IS/IT strategy process. There are a number of ways in which IS strategy success can potentially be operationalized and measured.

#### SELF CHECK EXERCISE 2

1. Explain strategic process as a continuous process.

KEYWORDS: STRATEGY, MANAGEMENT, ANALYTICAL TOOL, STRATEGIC THRUST

#### REVIEW QUESTIONS

#### SHORT QUESTIONS

1. Briefly explain the approaches to IS strategy development
2. Explain “strategic process as a learning process”

#### LONG QUESTIONS

Q1. Explain the approaches to the IS strategy development.

Q2. What do you understand by Strategic Thrust.

#### SUGGESTED READINGS

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar

#### SOLUTION TO SELF CHECK EXERCISE (CHAPTER 8)

##### SELF CHECK EXERCISE 1

1. Top management lacked awareness of the impact IS/IT is having generally and did not understand how IS/IT offered strategic advantages. They tended to see ‘computers’ in purely an operational context—still essentially a DP era view.  
  
They perceived a credibility gap between the ‘hype’ of the IT industry as to what IT can actually do and how easy it is to do it, given the difficulties their organization had had in delivering the claimed benefits.  
  
Top managers did not view information as a business resource to be managed for longterm benefit. They only appreciated its criticality when they could not get what they needed.  
  
Despite the difficulty in expressing all IS benefits in economic terms, top management still demand to see a financial justification for investments.  
  
Finally, and an increasingly apparent problem today, is that top managers have become action orientated with a short-term focus that militates against putting much effort into long-term planning, especially of IS/IT, given the other issues above.

##### SELF CHECK EXERCISE 2

1. Once a strategic perspective on IS/IT is established and a strategy process is instituted, it should become a continuously evolving process, where the strategies and plans are refreshed regularly and even frequently, according to external forces, business needs and opportunities, the planning timetable, culture of the organization, and the benefits delivered by implementation of the strategy. Depending on the scope of the strategy process, the main deliverables, hard or so, may be virtually unchanged or may be completely revised.



**Lesson No. 9**

**STRATEGY IMPLEMENTATION**

**STRUCTURE**

- 9.0 Objectives
- 9.1 Strategy Implementation
- 9.2 Strategic Choice
  - 9.2(a) Portfolio and Planning Matrices
  - 9.2(b) Other Planning/Policy Matrices
  - 9.2(c) Implications for IS/IT strategy
  - 9.2(d) Competitive forces and Competitive Strategies
- 9.3 Review questions
- 9.4 suggested reading
- 9.5 solution to self check exercise

**9.0 OBJECTIVES**

After reading this lesson, students would be able to answer + Strategic Choices \*fr Planning Matrices  
Implications of Strategy

**9.1 STRATEGY IMPLEMENTATION**

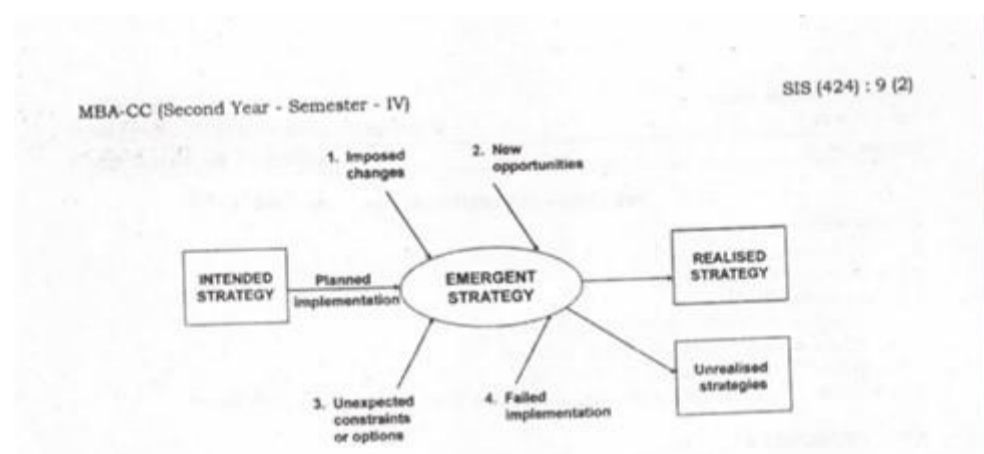
Strategies are only a means to an end, to achieve anything they need to be implemented! This requires that adequate resources are obtained, and allocated effectively; that the appropriate organization and responsibilities are in place and -hat people are motivated to contribute to the achievement of the strategies.

As these strategies are being implemented, it is obviously important both to monitor performance and to control activities to ensure actions taken are producing the specific results that will lead to achievement of the overall set of objectives. The results of this performance measurement will be used in a feedback loop to refine the objectives of the organization, whether the strategies are being realized or not.

While, at any one time, an organization can use all its knowledge and experience to devise its intended strategy and plan for its implementation, things will not turn out as predicted. Unexpected constraints or new options will occur, changes will be enforced by the actions of others, new opportunities will arise that could not have been predicted and some parts of the strategy will fail to be implemented successfully. By having the combination of processes, the organization will be more able to 'craft' its strategy, such that a different but realizable strategy can emerge. The organization must also consciously accept that when aspects of the original strategy become unrealizable, it must stop pursuing them. This is often easier said than done in large organizations! Having a strategic management process that can adapt in this way to changing circumstances is not a substitute for initial strategic analysis and planning, it is a way of making it work! This approach also, perhaps, enables the talent of the people in the organization to become involved in its strategic development, rather than merely used to implement a strategy devised by a small group of senior management.

**SELF CHECK EXERCISE 1**

1. What are the basic pre-requisites to strategy implementation?



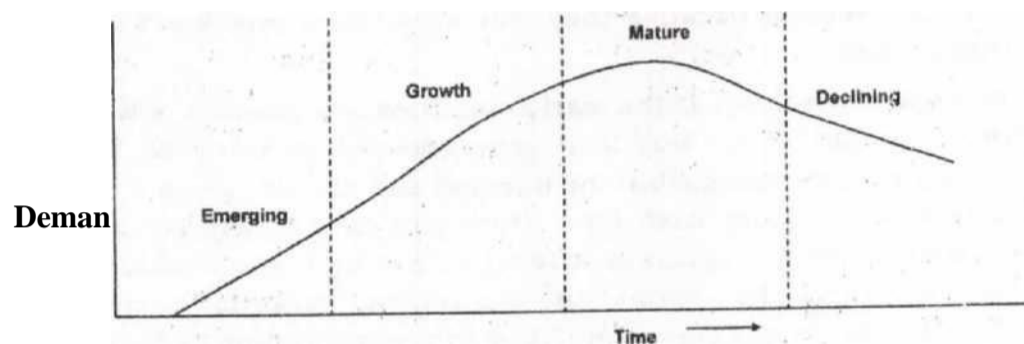
## 9.2 STRATEGIC CHOICE (STRATEGY TOOLS AND TECHNIQUE)

In formulating strategy, there are many tools and techniques used in practice. As the various techniques are considered, the implications for IS/IT strategy formulation that can immediately be derived are discussed. Achieving effective alignment of IS/IT and business strategies will happen more easily if the thinking processes are intimately linked as early as possible in the derivation of the intended business strategy.

### 9.2(a) Portfolio and Planning Matrices- The Boston Consulting Group Business Matrix

The Boston Matrix (or Boston Square) is one of the earliest examples of the use of portfolio matrix techniques. It is essentially based on two precepts a product life cycle and the relationship between market share and profitability. It also reflects the rationale of the experience curve', whereby the more times something is made the lower the cost will become due to continuing improvements in the process and the achievement of economies of scale. The experience curve is more relevant

costs of production or by providing features valued by customers, will still succeed. Maintaining a high relative share, by increasing actual share, is essential to both customers' perception of the product and achieving necessary economies of scale. The position of a product, or a whole business, on the matrix gives indications as to appropriate future strategies.



Emerging	Growth	Mature	Declining
Efficiency Product specification Customer requirements	*Product enhancement * Customer service *Capacity development and utilization	Product variations Customer segmentation Product cost reduction Costing/So	Reduce inventory levels and optimize service costs <sup>1</sup> Sales forecasting

(DEMAND UNKNOWN) [DEMAND < SUPPLY] [DEMAND < SUPPLY]

The 'stars' are products with high growth in demand and the best profit potential, provided a high market share is achieved. Star products generate significant revenue, but also require substantial investment in order to establish themselves in the markets and provide the production capacity or service delivery

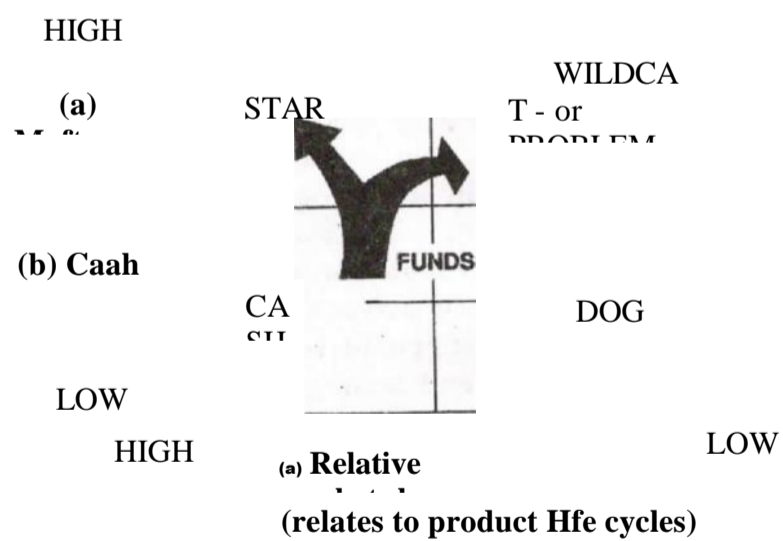


Figure Product portfolio (source: Boston Consulting Group)

Products in the quadrant where market growth is high, but current market share is low, are called 'problem children' or 'wildcats'. These products require a significant investment but generate little cash in return. The cash is sourced from the cash cows and is used to develop and promote some of these wildcats, in the hope that they will achieve higher market share and become tomorrow's stars and future cash cows. Other wildcats should be disinvested, because they will never turn into stars and may even become 'dogs' straightaway.

When the demand slows down as the market matures, the product is well established and, although fewer new customers buy it, it generates repeat sales. At this point, the previous star products require less cash to be injected and should, given a strong market share, generate significant positive cash flow. These are called 'cash cows'. During this period, the firm endeavours to maintain a level of product and service quality and sufficient marketing to preserve its share of the market, but seeks lower costs of supply, production and distribution to maintain the net cash generation for as long as possible.

If a profitable market share is never achieved or market share is eroded as the product is superseded by new, better or cheaper products or by the effects of fashion, the product is becoming obsolescent and the company must be wary of putting more money into the product with a consequent reduced rate of return. These products are called dogs and, ideally, should be disinvested or targeted more precisely at those sectors of the market where demand still exists.

The model emphasizes a few key issues in strategy:

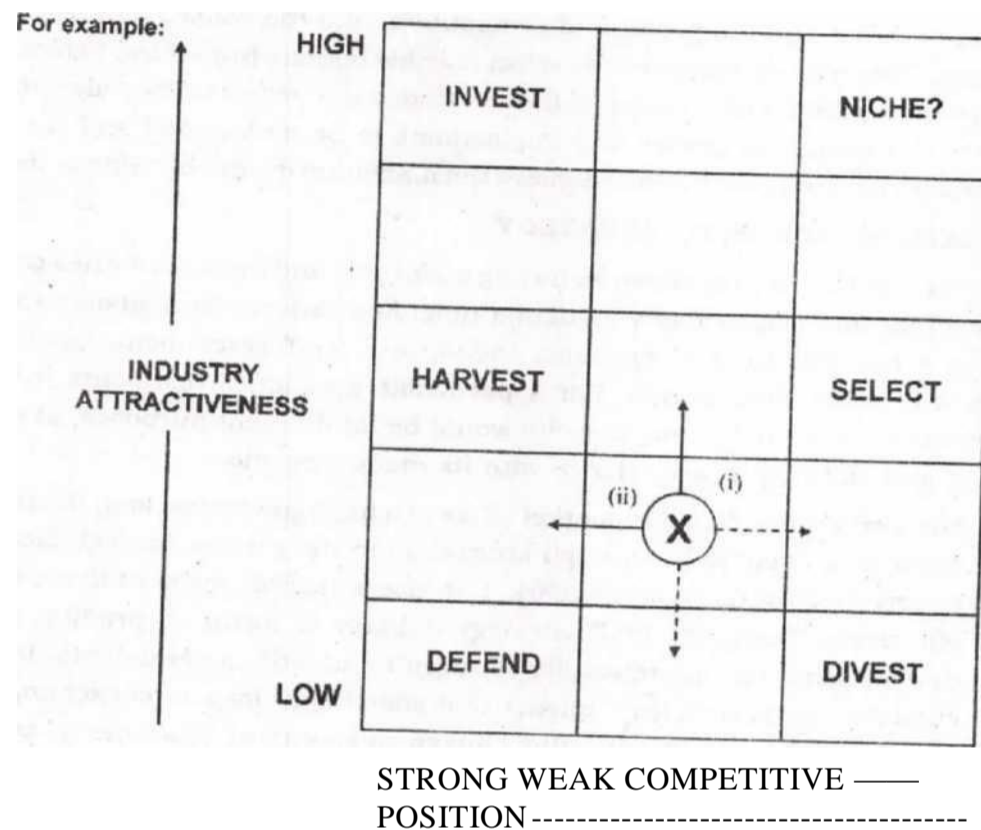
- \* the need to manage products according to market opportunities and pressures, not internal factors;
- + the need to reinvest net cash inflows into future products to ensure continuing sources of revenue;
- + the need to have a complete and balanced portfolio if the business is to thrive in the long term.

Increasing pressure from shareholders to dispense a greater share of the profits (from the cash cows) in dividends has created problems for even successful companies, by reducing their ability to reinvest in the development of future products and services.

Although the Boston Matrix is a useful analysis and planning model, because it provides focus for key issues such as cash flow, market share and industry growth, it may simplify many of the factors involved in achieving business success. Its underpinning rationale, derived from manufacturing of products, is less valid in the service industries that now form the majority of US and European organizations. Growth rate and market shares are only two aspects of industry attractiveness and competitive position, respectively, and more variables need to be considered. A number of such matrices, their pros and cons and the detailed business and management issues implied by the various segmentations are described in detail by Higgins. Some are summarized here to give an overview of the different variables accommodated.

The figure below is a graph between

1. Industry Attractiveness
2. Competitive Position



### 9.2(b) Other Planning/Policy Matrices

These all extend the number of variables considered and hence the options available, resulting in a  $3 \times 3$  or  $3 \times 5$  matrix, as shown in Figure 2.6. Some matrices consider more of the stages in the product and industry life cycles. As mentioned earlier, the Boston Matrix is only really useful in the growth and mature stages in the full four-stage cycle of emergence, growth, maturity and decline during which strategies must change. High-growth markets are inherently more attractive but other factors that make industries more or less attractive are: size, market diversity, existing competitive structure, prices, profitability, technology development effects, and legal, social and environmental factors. Market share obviously is a reflection of a company's strength, but other factors are important such as technology position, people, brand image, financial structure, capacity and strengths in related markets.

The first stage in using any of the matrices is to understand the current position of the business unit or product—x in Figure 2.6. Then, two options exist for growth, by (i) developing the industry, perhaps also to the benefit of others, by product or service innovation or by attracting new types of customer, or (ii) gaining market share from competitors. Equally, strategies need to be considered to defend the existing position against industry decline or competitive pressure. In general, any strategy must enable manageable moves through the matrix—then, new options will open up as the business migrates over time. But, it is not realistic to jump dramatically across the matrix unless some major innovation is achieved that others cannot copy.

All of the matrices are useful in describing the current position of a business and its products

in relation to the market and the position of competitors, and the consequent issues the strategy needs to address. They help management to select feasible options from those potentially available, both to improve the position and to counter threats from competitors. They also enable changing positions to be monitored, the causes and implications to be understood and the organization's resources to be allocated or reallocated to achieve the maximum overall benefits to its stakeholders.

### **9.2(c) IMPLICATIONS FOR IS/IT STRATEGY**

Industries can also be considered as having a life cycle and most industries can be described as being in one of the four stages at any particular time. As strategies for a business will be different in emerging, growing, mature and declining industries, IS/IT investments should be targeted differently, as with other investments. For a particular product, investments in its promotion, distribution channels and production capacity would be for different purposes, at different stages of the life cycle and will vary in accordance with its market position:

- For a wildcat product (low market share in a high-growth market), the route to eventual success is likely to be through innovation in the general marketplace or selecting a clearly-focused niche in the market—a size of market segment that can be addressed effectively. Thus, the IS/IT strategy is likely to focus on product and/or process development or, alternatively, be used to identify potential customers, segment customer types and, then, ensure that effective information exchanges occur about the product/service with the chosen segment of customers, to enable exact specification of service and product requirements.
- Star products and businesses (strong market position in an attractive or high-growth market) imply a leading role for the company. Keeping ahead of, or at least in pace with, developing customer requirements and competing product offerings is vital to success, as is matching sales growth with market growth. Systems and information focus will be toward the customer-identifying customers and their requirements to achieve a better understanding of demand than actual or potential competitors.

The systems might also be aimed at allowing growth in business, handling greater order volumes or variety of product mixtures, or types of customer service. The main emphasis will be on business innovation to satisfy market requirements and differentiate the firm in that marketplace. Systems investment focus should therefore be to add value and cope with growth.

- Cash cow products and businesses (strong market position in mature, lower-growth markets) are to be 'milked', by defending the current position, ensuring that costs are lower than, or at least as low as, those of competitors and that demand is satisfied in the optimum way. Matching the details of supply and demand volumes is important to keep customers satisfied, as is organizing resources and processes to obtain maximum capacity utilization. Business productivity and control of customers and suppliers to defend a market position is the main aim—not to allow competitors to gain advantage—and systems will tend to focus on control of the business relationships and activities rather than innovation.
- Dog products and businesses (weak position in a low-growth or declining market) are unlikely to attract much corporate investment funding, unless it can clearly be seen to increase market share and/or improve deliverable profits. Divestment may be the eventual aim and, so, it is often undesirable to consider integration of IS



strategy with the rest of the business. Alternatively, a niche market may be carved out by segmenting the products/markets. In general, IS/IT investment should follow the business direction—selective, strongly financially-justified investments to improve profit performance by reducing costs or securing customers. Very little innovative IS/IT use can be expected.

These suggestions may seem rather generalized, if only because the matrices themselves, make no claim to precise investment guidelines—they are ways of helping understand situations, enabling the assessment of different options. If nothing else, they can help sharpen the dialogue between managers. During the industry evolution cycle, a firm will change its business focus from customers to products to customers, etc. as the cycle evolves, in order to achieve market growth and improved market share. Growth is more manageable if, at any particular time, either the product or customer base is relatively stable. Either existing products are marketed to a wider customer base or new products are developed for a known set of customer needs. Information systems focus can be expected to follow this pattern, being used to attract, and establish channels to, potential new customers and support the logistics of servicing those customers, or to enable the development and delivery of new, better or lower-cost products or services to achieve growth through existing market links. At no stage will the other parameter be ignored, but, at any one time, the emphasis is likely to be on product or customer development.

A part from products and customers, a model can have a third dimension—distribution channels. The Internet has opened up electronic channels to all types of customer, including directly to end-consumers. Selecting the appropriate channel to serve target customer groups or for delivery of the product or service is a key strategic decision. The newer channels, call centres and the Internet are IS/IT based and the development and operation of these customer links is an integral part of both the business and IS/IT strategies. Managing the channel mix (e.g. in a bank with branches, call centre and online banking) is not just a matter of managing delivery to customers' needs in each channel, but also requires decisions on the extent of cross-channel service integration to be provided.

Obviously, once a product or customer base has been extended, the scope of the firm's coverage has moved. Once a wider range of products have been developed for a known market, it probably means that a broader market is now available. Equally, given that a broader market for a restricted product range has been established, a wider variety of needs are known and can be economically satisfied, justifying further product investments.

Historically, diversification—new products to new customers—has usually proved unsuccessful, unless achieved in the steps above or by acquisition. More recently, two approaches have proved more successful. First, the establishment of 'superbrands', such as Virgin and Nike, has enabled organizations to develop both new products and target new market segments under the brand 'umbrella'. Second, organizations such as HSBC and the Prudential have set up separate new businesses to sell, exclusively, telephone or Internet-based banking products to customer segments where they are traditionally weak. In these cases, the IS/IT strategy is very specific to that business unit and would not, at this 'wildcat' stage at least, be linked to strategies elsewhere in the business.

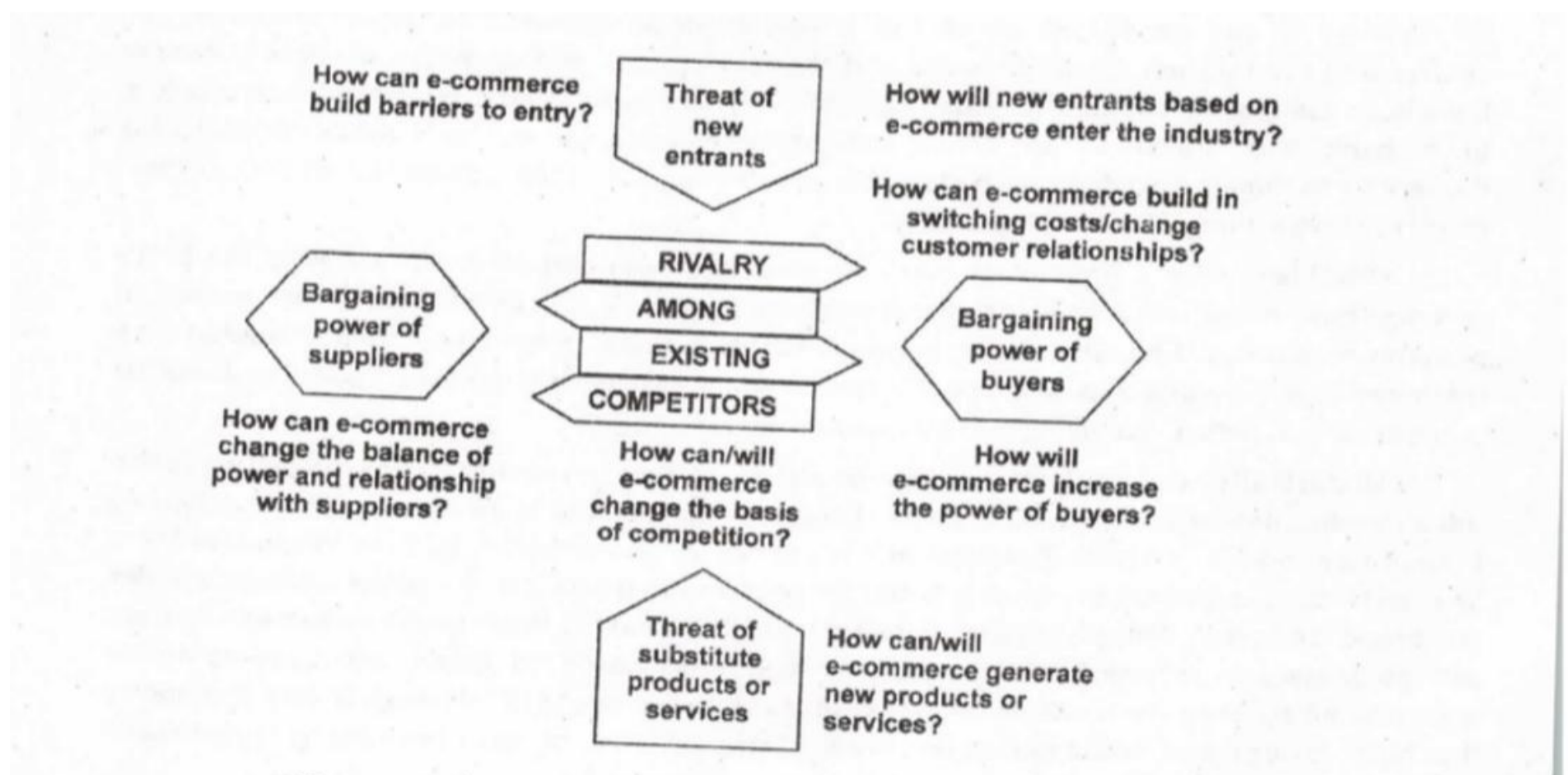
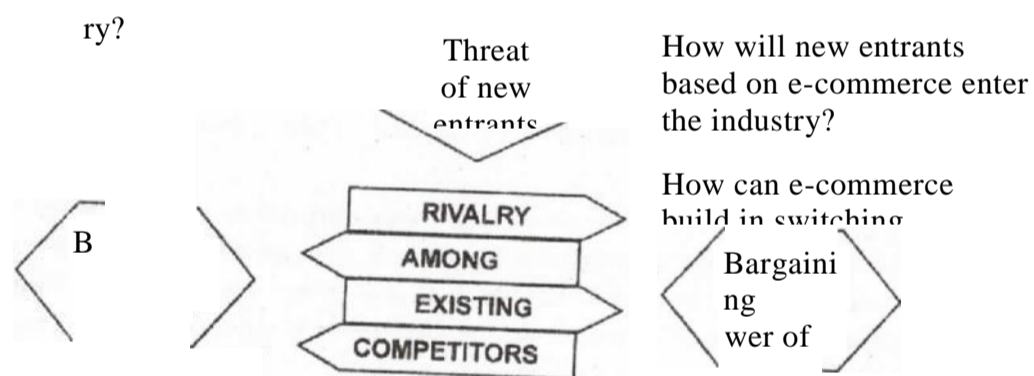
#### **9.2(d) COMPETITIVE FORCES AND COMPETITIVE STRATEGIES**

An enterprise exists within an industry, and, to succeed, it must effectively deal with the competitive forces that exist within the particular industry. For example, the forces in an emerging

industry such as bio- technology or genetic engineering are considerably different from those of a growth industry, say leisure or financial services, or the more mature or declining industries such as automobiles or coal mining. In addition, the pressures of operating globally, as in the software industry, are very different from those in localized industries.

The enterprise interacts with its customers, suppliers and competitors, but, in addition to these interactions, there are potential new entrants into the particular competitive marketplace and potential substitute products and services. To survive and thrive in this environment, it is obviously vital to understand these interactions and the implications, in terms of how to avoid being disadvantaged and to understand the opportunities to gain competitive advantage. Figure outlines these five forces buyers, suppliers, competitors, new entrants and substitute products--and overlays some typical questions about the potential impact of e-commerce on these forces.

At any one time, one or more of the forces may be exerting particular pressure on the competing firms. The existing rivals may be competing viciously via a price war and /or aggressive in new products and services or advertising campaigns. Alternatively, competitors may be cooperating to ward off an external threat. The buyers or suppliers may be powerful enough to bargain away much of the profitability available to the firm and its immediate competitors. Increasing buyer and supplier switching costs, making a change of relationship expensive, can reduce that power. New companies may be a threat in terms of new entrants to the industry because of low entry barriers or weak competitive rivals. Substitute products are always possible, not just in terms of replacement products or services but also as alternative ways for buyers to spend their money.



Achieving long-term success in any competitive environment, according to Porter's rationale results from being the lowest-cost producer of the product or service or by differentiating it from those of competitors in terms of its value, as perceived by the customers. Lowest cost is normally achieved with volume production (i.e. high market share), or by flexible manufacturing or distribution systems. These two strategies can either be followed overall or by focusing on particular segments of the market—'niches'.

An example of these generic strategies can be seen by reference to Mercedes. The Mercedes limousine is regarded in most parts of the world as being the type of car that a successful businessman should be driving. The company has consistently advertised its cars in that way,

with the emphasis always on high quality, high reliability and high price Mercedes is differentiating itself from its competitors in the executive car market. However, within Europe, the Mercedes is probably the most common car to be seen in taxi fleets. Taxi operators are not known for their profligate expenditure on executive cars, but are usually very careful to assess the long-term costs of running their taxi fleet. In this regard, Mercedes comes out extremely well due to the emphasis of the company on high reliability, low maintenance costs and high resale value, thereby making their cars the most attractive, on average, for a taxi fleet operator. In this way, Mercedes is operating in the niche market of the taxi fleet operator by being the market leader using a low-cost strategy. Recently, Mercedes has developed models to compete in the small car market, where price competition is fierce. It remains to be seen whether it can achieve success in differentiating its product in a price-sensitive mass market. Some of the major requirements for an enterprise to be able to adopt the two basic generic aspects of each are quite different and would imply different organizational structures, types of people employed and management styles, resulting in quite different corporate cultures. The most common error that organizations make is to get stuck between strategies by not deciding on their market scope and basic source of advantage—low cost or differentiation. Consequently, costs are too high and prices cannot be sustained, leading to low margin

## **SELF CHECK EXERCISE 2**

1. Explain "STARS" as regards to BCG Matrix

**Keywords: strategy implementation, strategic choices, planning matrices, BCG matrix**

## **REVIEW QUESTIONS**

### **SHORT QUESTIONS**

1. What is strategy implementation?
2. What is strategic choice
3. Explain competitive forces and competitive strategies

### **LONG QUESTIONS :**

2. Explain the strategy implementation? What is the need and advantage of strategy implementation
3. How to make the strategic choice in an organization
4. Explain in detail BCG MATRIX

## **SOLUTION TO SELF CHECK EXERCISE (CHAPTER 9)**

### **SELF CHECK EXERCISE 1**

1. *requires that adequate resources are obtained, and allocated effectively; that the appropriate organization and responsibilities are in place and that people are motivated to contribute to the achievement of the strategies.*

### **SELF CHECK EXERCISE 2**

1. *The 'stars' are products with high growth in demand and the best profit potential, provided a high market share is achieved. Star products generate significant revenue, but also require substantial investment in order to establish themselves in the markets and provide the production capacity or service delivery*

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the experimental procedures and the statistical tools employed to interpret the results.

3. The third part of the document presents the findings of the study, highlighting the key observations and trends. It discusses the implications of these findings for future research and practical applications.

4. The fourth part of the document provides a comprehensive overview of the theoretical background and the conceptual framework of the study. It explains the underlying principles and the relationships between the variables being investigated.

5. The fifth part of the document discusses the limitations of the study and the potential areas for further research. It acknowledges the constraints of the current research and suggests directions for future investigations.

6. The sixth part of the document concludes the study by summarizing the main findings and the overall contribution of the research. It reiterates the significance of the work and the need for continued exploration in this field.

7. The seventh part of the document provides a list of references and sources used in the study. It includes a comprehensive bibliography of relevant literature and research papers.

8. The eighth part of the document contains the appendices, which include additional data, tables, and figures that support the main text. These appendices provide a more detailed look at the raw data and the analysis process.

9. The ninth part of the document discusses the ethical considerations and the approval process for the study. It details the measures taken to ensure the confidentiality and integrity of the data, and the adherence to ethical standards.

10. The tenth part of the document provides a final summary and a call to action. It encourages the reader to engage with the research and to contribute to the advancement of knowledge in the field.

**STRATEGIC ANALYSIS**

**STRUCTURE**

- 10.0 Objectives
- 10.1 Strategic Analysis 10.1(A)  
Industry Analysis
- 10.1(B) Analysis of Competitive Forces
- 10.1(C) Generic Business Strategies
- 10.1(D) Low-Cost Strategy
- 10.1(E) Differentiation Strategy
- 10.1(F) Niche/Focus Strategy
- 10.1(G) A Resource-Based View of Strategy
- 10.1(H) Competencies

**10.0 OBJECTIVES**

After reading this lesson, students would be able to answer +  
Strategic Analysis

**10.1 STRATEGIC ANALYSIS**

**Implications for IS/IT Strategy**

These basic concepts of analysing competitive opportunities, threats and strategies have been used by a number of people as a basis for considering IS/IT and its potential impact. In the 1980s, Parsons, McFarlan, Cash and others used Porter's models to examine how IS/IT had and could impact certain industries and affect any particular firm in that industry, depending on its business position in the industry and its adopted business strategy. More recently, Porter himself has applied these models to explore the impact of the Internet on firms and industries.

This implies that the opportunities and threats that IS/IT can offer and pose will vary over time in an industry, partly due to the role IS/IT can

Table Characteristics of generic strategies

	Commonly	Common
Overall cost leadership	Sustained capital investment and Process engineering intense supervision of labor	Tight cost control, frequent, detailed Structured Incentives based on meeting strict
Differentiation	Strong marketing abilities and creative flair <b>Product-engineering</b> skills	Strong coordination among functions'- among functions Subjective measurement and incentives instead of

Strong capability  
in basic research  
Corporate  
reputation for  
quality or Strong

Amenities to attract  
highly-skilled labour  
Looser, more  
trusting

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play and partly due to the economic and competitive situation of the industry. But, as with product innovation, IS/IT innovation can stimulate new industry growth or, in some cases, hasten the decline of certain industries. While the arrival of Amazon.com has had a serious impact on traditional book retailers, the total sales of books have increased significantly. In some cases, IS/IT impact can be immediate and obvious but, in others, the effects are secondary and require other changes in business economics and social behaviour or parallel developments in other fields before they become fully effective. This is the case with e-retailing in 2002, the predicted effects being dependent more on costs of distribution and changes in shopping preferences and habits, than on the ability to browse and purchase online—the demise of online grocer Webvan being indicative of this.

#### 10.1(a) Industry Analysis

Management should ask questions regarding how IS/IT could affect the essential industry ingredients:

- the products and services;
- markets, distribution channels and customer behaviour;
- economics of production, distribution or servicing.

Obviously, if IS/IT can have a major effect on any of these, the implications for all the competing firms are significant, and management must consider, in more depth, how those effects will or could manifest themselves.

1. How can/could IS/IT effects the nature and value of the product or service and its life cycle?
  - Financial and business information services such as Dun & Bradstreet and Reuters have developed new services for commercial organizations to interrogate directly, as have brokers and banks, enabling new ways of trading shares and securities and making new types of bank account available to consumers.
  - Online journals are rapidly replacing printed versions. The new products can be customized to meet the needs of particular groups and provide links to topic coverage across editions. Search engines, based on new sophisticated algorithms, can greatly speed up inquiries. Consequently, many university libraries are now mainly network access points to electronically-published papers,
  - Life insurance companies can develop new insurance and pension policy types, providing complex investment combinations from concept to the target market in weeks rather than months. This can render older products uncompetitive very quickly, creating problems of long-term commitments to supporting obsolete products.
  - Many recruitment services now operate exclusively via the Internet. Job applications

can only be submitted electronically in many cases, even if the job advertisement is posted in the traditional media. The initial response and filter of applications is often done via computer systems, rather than people—an essential feature given the global reach of online job adverts and the potentially high volume of interest. In general terms, the questions to be asked are: can IS/IT generate a new product or a new line of business, or enable, or be used to add additional features or services to increase the product's value-as perceived by the consumer/customer -to change the basis for purchasing? This is generally more feasible if the product has a very high information content.

1. How can/could IS/IT affect the demand for products and services, segment markets more effectively, extend them geographically, or provide new distribution channels to reach the market?
2. How can IS/ IT affect the cost base of the key processes in the industry or change the balance in the trade-off between flexibility and standardization?

This first level of 'interrogation' of IS/IT potential in the industry focuses on products, markets and economics and considers options available to all the firms in the industry and, importantly, to potential new entrants, including start-up companies, who can exploit new technology to develop and sell new products or services, or create new channels that address the needs of some or all the industry customer base, or both. Gaining an advantage at this level is difficult for others to counter except by copying or by risking even more dramatic and effective innovation. Consequently, many of the anecdotes of sustained success derive from companies who have fundamentally changed one of these aspects. These changes are irreversible in that, if the factors for success in the industry and the relevant capabilities required by companies wishing to succeed in the industry are fundamentally altered, the competitive game will have a new set of rules.

#### **10.1(b) ANALYSIS OF COMPETITIVE FORCES TO IDENTIFY IS/IT OPPORTUNITY AND THREATS**

IS/IT has a considerable impact on all forces in the industry because of the nature of the product, how it is purchased and the information needed to be exchanged in order to complete a transaction. Other industries, such as financial services and publishing, are even more information intensive in that the product itself is information. Even in other industries, where the bases of competition are not as dependent on information as airlines, travel, financial services and publishing, one or more of the forces has been significantly impacted by an enterprise using IS/ IT quite deliberately to achieve a competitive advantage.

Over the last 20 years, food supermarkets have built barriers to entry through Electronic Point of Sale (EPOS) systems linked to purchasing and logistics—the size of the investment and control of the supply chains reducing the potential for new entrants. More recently, via loyalty cards, Tesco and other retailers have increased consumer switching costs as well as obtained valuable information on buying patterns, enabling both higher leverage over suppliers and the tailoring of store layout and product mix to the local market. In addition, by building basic financial products through the loyalty cards they have become new entrants in the financial service industry. Finally, the same infrastructure has facilitated a move into online e-tailing, extending the range of options to the customer, and limiting the scope for new entrants or substitute services to gain a foothold.

The Internet has changed the competitive landscape in many industries and new business and industry models are beginning to emerge. In general, three effects seem to happen across most industries. Buyer power increases as more choice becomes available online, through portals and search engines; buying groups, normally based on a common interest, have emerged to produce collective rather than individual buying power. Both disintermediation (cutting out existing intermediaries by selling direct via the Net) and reintermediation (new firms providing information-based services connecting buyers and a range of sellers) can occur through the industry supply or value chain. As mentioned earlier, trading hubs, auctions and e-market places are expected to have a major influence over both selling and procurement processes in the next decade and may lead to restructuring in some industries. Combined with the inherent global reach of online trading, actual and potential competitors are no longer restricted by geography; these changes imply a wider view of the competitive issues has to be taken. The response in most cases is to tighten the links, especially information sharing, between the sellers and their customers to increase switching costs and prevent 'gaps' appearing that new entrants can exploit.

For any firm in any industry, the questioning process, according to Porter should proceed in two stages. First, what forces are determining the future of the industry and our potential success? Who dominates the industry and by what strategy? For example:

- Who might enter the industry, why and what would the effect be?
- What substitute products might affect the market for existing products?
- On what basis are we currently competing and how might that change?
- What leverage do suppliers exert and how could the control of key resources affect success?
- How much power and discretion do buyers (customers) have and how will this change market/product possibilities?

However, these are all business questions, the result of which may be that only one or two of the forces are critical at any particular time. Once that has been established, more specific IS/ IT questions should focus on these areas of concern— both opportunities and threats—to identify the available options. A final stage should then be to reverse the thinking process by looking at the other, less critical, forces to identify whether IS/IT could change their importance in the future.

### **10.1(c) GENERIC BUSINESS STRATEGIES**

Companies that succeed in an industry in the long term need to outperform the competitors, either by achieving lower costs or by differentiating themselves in the view of the customer, enabling them to obtain a price premium. Some companies, for a period of time at least, can achieve both. For instance, Kodak in the 1960s and early 1970s achieved this in the colour film market and IBM in the 1970s with mainframe computers. Most companies, however, have to strive for one advantage or the other, at least in the short to medium term.

The other critical decision is to define the extent of the market within which the company wishes to gain that advantage. The scope can be defined as 'industry wide', implying that the company must have a range of products to meet the requirements of the majority of potential customers. Other companies choose a segment of the marketplace, focus on a particular niche to obtain an advantage by matching their products and services to the needs of a subset of the potential customers. BMW, Volvo, Jaguar and Mercedes are all examples of companies focusing in the motor industry. The UK's Giro Bank, while offering similar services to the major banks, has tended to focus its services on the lower-income end of the consumer market.



### **10.1(d) LOW-COST STRATEGY**

Cost leadership strategies require the organization to identify the lowest-cost approaches to the direct activities of the business, minimize the indirect/overhead expenses and provide management with detailed reporting on all aspects of fixed and variable costs incurred and their recovery. Low cost is achieved through structure and conformity and 'value engineering' the processes of the business, plus accuracy in control and measurement of performance, and early identification and action when variances occur from expected results--a 'systems' environment.

Traditionally, IS/IT has been employed process by process, often causing inefficiency between processes. If that inefficiency is moved into the customer and passed back to the supplier, then the low cost may be offset by other problems. But, again, IS/IT offers potential solutions.

Systems will be required to deal with basic business information processes efficiently and link them together effectively, not necessarily to produce a highly integrated information resource. Flexibility in systems increases their cost of development and operation; simple systems, often standard packages implemented without change, are more cost-effective and force user adherence and conformity. Integration can reduce the opportunities to improve the efficiency of any particular process as technology offers further, specific cost savings. Information is not seen as a key resource for exploitation, but as an overhead cost to be processed efficiently with minimum additional IS/IT overhead! Integration produces added-value potential but incurs overheads.

Electronic commerce, for example, will probably provide cost advantages if it is used to avoid processing paper-orders, invoices, statements-(i.e. more efficient transaction handling). It also enables invoices to be rendered unnecessary by triggering funds transfer at a certain period after goods receipt (to be reconciled later). The relative costs to both customer and supplier of paperwork processing and debtor funding can be optimized. This is linking two systems together to produce greater efficiency in both. Similar relationships can also be continually improved by better systems within the organization.

#### **SELF CHECK EXERCISE 1**

1. How is cost leadership strategy implemented in an organization?

### **10.1(e) DIFFERENTIATION STRATEGY**

The majority of organizations have to follow a differentiation strategy, since, theoretically at least, only one company can have cost leadership of a product or service at any one time. The essential emphases are innovation and creativity, market orientation and people-driven rather than systems-driven management controls. For instance, incentive schemes will be market or sales based, not production based. Often, key components of differentiation will be the creation of strong brand and corporate images and close, mutually beneficial links with distribution channel firms. The strategic use of IS/IT will focus on enabling new things to be achieved or existing things to be done better. That is not to say that opportunities to use IS/IT to reduce cost will be ignored.

While basic business process systems will need to operate efficiently in dealing with the bulk of transactions and basic calculation and reporting requirements, the value of having flexibility to extract information from an integrated database or comprehensive data warehouse will drive the systems toward sophistication and user tailoring rather than standard solutions.

Even where major packages such as ERP or CRM software are implemented for core processes, it is likely that additional functionality will be needed to address the organizational subtleties that lead to differentiation. If mismanaged this can, of course, lead to unnecessary spending on IS/IT.

#### **10.1(f) NICHE/FOCUS STRATEGY**

Within a market niche, an organization will need to adopt a differentiation or low-cost strategy to achieve long-term success in that niche. All that has been said in the previous two sections will then apply. However, in addition, IS/IT may be a competitive weapon in identifying and then establishing a strong hold on a particular niche. In general terms, the uses of IS/IT to achieve success in a limited subset of a general market will be in:

- \* identifying the target market, and developing a unique base of information about the selected market and its needs; and/or
- + establishing a specialist process via systems to produce a clear cost advantage or distinctive customer value proposition vis-a-vis general market servers; and/or, linking the organization via systems into the business processes of customers to increase switching costs and establish potential barriers to re-entry from general market servers.

#### **SELF CHECK EXERCISE 2**

1. how is niche/focus strategy achieved by an organization?

#### **10.1(g) A RESOURCE-BASED VIEW OF STRATEGY**

It was stated earlier in the chapter that these planning tools have evolved since the 1950s and are continuing to evolve. Until the 1990s, the approach to defining strategies was based on establishing objectives and then defining how to achieve them—the traditional ‘ends-ways-means’ approach. In the 1990s, many strategic thinkers, started to develop new ways of considering strategies. Is there value in the concept of looking at means, then ways, then ends; that is, defining what resources are available to the enterprise as a basis for defining what can be achieved by the enterprise? Or, equally, consideration of the ways the organization does things uniquely or exceptionally well—its abilities or competencies—may lead to defining more appropriate ends or the procurement and development of improved, more valuable resources.

Over the past few years, the approach to strategic management has evolved toward a balance or reconciliation between competitive positioning and resource or competence-based strategic development. While many of the tools and models described earlier in this chapter enable organizations to understand their competitive environment and strategic options, the resulting strategy is essentially reactive. As ‘strategic thinking’, as opposed to strategic analysis or planning, began to emerge, the suggestion was that longer-term success would result from a realignment of the organization’s resources and capabilities to match the demands of the environment. This implies a closer examination of an organization’s assets, skills, knowledge processes, culture, etc. and how each of those attributes needs to be realigned. In some cases, the mismatch was considerable and radical readjustment was necessary and, in the early 1990s, ‘re-engineering the business’ became a hot topic. Business re-engineering is not a strategy, it is the means of changing strategies in response to a changing environment, where continuous or incremental change is insufficient. Unfortunately, many organizations only require changing radically because they have not been adjusting continuously over time. It is clearly difficult to achieve radical change successfully in an enterprise that has not changed for a considerable time. Either by incremental, continuous realignment or radical change, organizations are essentially trying to establish a set of competencies that will deliver future success.

#### **10.1(h) COMPETENCIES AND COMPETITIVE ADVANTAGE**

Based on the concept of resource-based strategies there are ‘three paths to market leadership’, each of which require different sets of competencies and in each of which IS/IT has a critical role to play. That is not to say that there are only three routes, although the three—‘Operational (or

Process) Excellence', 'Customer Intimacy' and 'Product Leadership'—probably cover a significant range of the possibilities. They are simple yet useful concepts in enabling business managers to define medium-term business strategy and establish an appropriate IS/IT strategy. They are away of expressing quite succinctly a necessary alignment between internal capabilities and ambitions and the requisites for success in a particular environment, at a certain time

1. Operational Excellence—enabling products and services to be obtained reliably, easily and cost-effectively by customers. This implies a focus on business processes to outperform others and can deliver both low costs and consistent quality of customer satisfaction. Such as Dell Computers, Wal-Mart and Federal Express as leaders in operational excellence in their industries. In all cases, the companies' information systems investments are a critical component enabling business simplification and efficient processes that are highly integrated throughout the core activities of the business.
2. Customer Intimacy—targeting markets very precisely and tailoring products and services to the needs of particular customer groups. The purpose here is not just to 'satisfy' but to 'please' customers by understanding their needs and meeting them on every occasion. This can obviously be expensive but it can build long-term customer loyalty.
3. Product Leadership—continuing product innovation meeting customers' needs. This implies not only creativity in developing new products and enhancing existing ones, but also astute market knowledge to ensure that they sell. The strategy involves delivering a continuous stream of new products and/or services, where what is new is valued by the customers. Although these three competence-based strategies are not the only routes to success, they can be used to:

\*i\* Understand and agree the main direction, rationale and focus of the business's strategy.

Companies succeeding in more than one dimension, most organizations can be successful by excelling in one of them. Most strategies imply 'majoring' on one of these areas for the next stage of development—probably one to two years ahead. At the same time, the business must not become uncompetitive in the other two. Action may well be needed to (say) ensure that its processes do not become markedly less effective than those of its competitors while it develops its new products, or costs will increase too quickly. Alternatively, it must not dissatisfy its customers while making major improvements in operational effectiveness.

\*f\* Gain consensus and agreement among the business management about what has to improve and why, which can be critical in establishing the 'themes' behind both the business and IS strategy

These aspects of strategic management have significant implications for the overall role of IS/IT, which can be a differentiating competency or may be an essential ingredient to support, enable or enhance other competencies

### SELF CHECK EXERCISE 3

1. Explain briefly customer intimacy

**KEYWORDS: strategic analysis, industry analysis, competitive forces**

### REVIEW QUESTIONS

#### SHORT QUESTIONS

1. What is strategic analysis?
2. Explain differentiation strategy adopted by an organization
3. How is operational excellence achieved by an organization?

#### LONG QUESTIONS

1. Explain the various types of strategies that can be adopted to gain competitive advantage.
2. Explain in detail industry analysis

### SOLUTION TO SELF CHECK EXERCISE (CHAPTER 10)

#### SELF CHECK EXERCISE 1

1. Cost leadership strategies require the organization to identify the lowest-cost approaches to the direct activities of the business, minimize the indirect/overhead expenses and provide management with detailed reporting on all aspects of fixed and variable costs incurred and their recovery. Low cost is achieved through structure and conformity and 'value engineering' the processes of the business, plus accuracy in control and measurement of performance, and early identification and action when variances occur from expected results—a 'systems' environment.

#### SELF CHECK EXERCISE 2

- *identifying the target market, and developing a unique base of information about the selected market and its needs; and/or*
- *establishing a specialist process via systems to produce a clear cost advantage or distinctive customer value proposition vis-a-vis general market servers; and/or, linking the organization via systems into the business processes of customers to increase switching costs and establish potential barriers to re-entry from general market servers.*



**STRATEGIC INFORMATION SYSTEMS**  
Semester-IV \_\_\_\_\_ AUTHOR: SAHIL RAJ  
Lesson No. 11

**IS PLANNING**

**STRUCTURE**

**11.0 Objectives**

<i>HI</i>	History of is Planning
nl,a)	Stages of Evolution of IS/IT in Relation to Expenditure
11.1(b)	The Data Processing and Is Eras : The lessons Learned

**11.2 Evolutionary Models**

**11.3 E-Business and E-Commerce**

**11.4 Review questions**

**11.5 Suggested reading**

**11.6 Solution to self check exercise**

**11.0 OBJECTIVES**

After reading this lesson, students would be able to answer

- \* History of IS
- 4. **Evolutionary models**
- .g. **E-commerce and E-business**

○ **11.1 HISTORY OF IS PLANNING**

○ **EARLY VIEWS AND MODELS OF IS/IT IN ORGANIZATIONS**

The use of computers in business began in the early 1950s but really only became significant in the mid- to late 1960s with the development of multi-purpose mainframe computers. Major increases in processing speed, cheaper memory and improved storage capacity afforded by magnetic disk and tape, plus better programming languages, made batch' data processing a viable option for many tasks and activities in organizations.

During the 1970s, minicomputers of increasing power and sophistication were used for a variety of business applications that were either not feasible or economic in a mainframe environment. However, the views developed of the role of information systems and their expected evolution were based strongly on a centralized, integrated concept derived from mainframe origins. The most well known of these models, capturing the evolution of IS/IT in an organization, was developed by Gibson and Nolan during the 1970s. Structure for information systems in an organization, based on a stratification of management activity into:

- \* Strategic Planning
- \* Management control
- \* Operational control

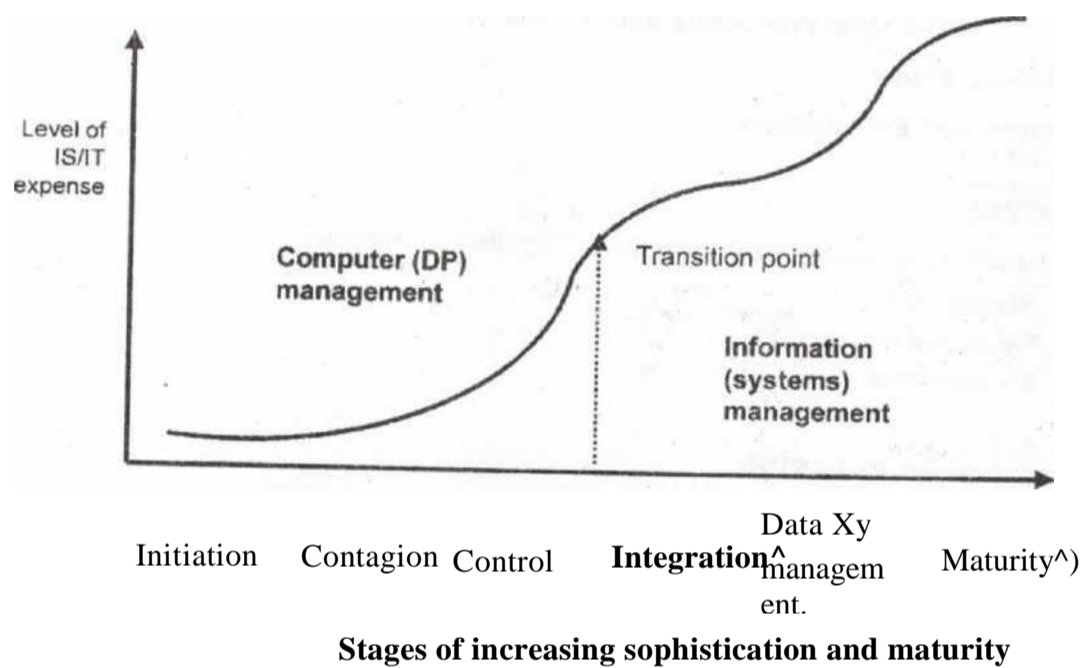
Different applications were built to support the different levels of management activity-hence, it provided an early way of classifying applications.

Based on analyses of the use of IS/IT in a number of large US organizations, Nolan and Gibson proposed an evolutionary model containing initially four 'stages of growth'. Later, two further stages were added by Nolan. The analysis involved considered six aspects or benchmarks of IS/ IT and its management in the organizations studied. These were (i) the rate of IS/ IT expenditure,

(11) the technological configuration (e.g. batch/online/ database), (iii) the applications portfolio (as m Anthony's model), (iv) the data processing (DP)/IT organization, (v) DP/IT planning and control approaches and (vi) user-awareness characteristics.

The validity and usefulness of the six-stage model have been explored by a number of researchers since it was published. In a review of past research on Nolan's stage hypothesis, enbasat and King found that empirical support is generally weak

#### 11. 1(a) STAGES OF EVOLUTION OF IS/IT IN RELATION TO EXPENDITURE



1. Initiation: batch processing to automate clerical operations to achieve cost reduction, purely operational systems focus, lack of management interest.
2. Contagion: rapid growth as users demand more applications based on high expectations of benefits, move to online systems, high rate of expense as DP tries to satisfy all user demands. Little control if any, except a drive to centralize in order to control.
3. Control: in response to management concern about cost, systems projects are expected to show a return, plans are produced and methodologies/standards enforced. Often produces a backlog of applications and dissatisfied users.
4. Integration: considerable expenditure on integrating (via Database) existing systems. User accountability for systems established and DP provides a service to users not just solutions to problems.
5. Data administration: information requirements rather than processing drive the applications portfolio and information is shared within the organization. Database capability is exploited as users understand the value of the information.
6. Maturity: the planning and development of IS/IT in the organization is closely coordinated with business development/analysis. Dwyer noted that in practice, the benchmarks

did not map consistently on to the stages as suggested by the original model; in particular, in the later stages, the complexity of the real world was not reflected in the simplicity of the model. He concluded that, 'Categorizing of DP from initiation to maturity may no longer be feasible with the diffusion of new technologies and functions being introduced. However, he accepted that individual benchmarks could be usefully adopted in assessing how effectively an organization was coping with the increasing importance of IS/IT.

King and Kraemer believed that the model had several weaknesses.

In particular, the empirical evidence for the stages was inconsistent and many of its assumptions were too simplistic to be useful. But they equally pointed out that many aspects of the model ring true to practitioners and researchers and it has had a considerable influence on IS management thinking since the 1970s. Its weakness—its simplicity—may be the key to its popularity. It does suggest an evolutionary approach during which different forces control the destiny of IS/IT in an organization. By the beginning of the 1990s, empirical research concluded that the model provided little help for the IT director attempting to create a successful IS unit within an organization. But despite its limitations, the model continues to be used by practitioners today. More significantly perhaps, Wiseman, suggested that the influential combination of the Anthony three-tier structured approach to defining organizational systems and the 'Nolan' stage model inhibited the strategic use of IS/IT. He stated that, Nolan's general purpose approach to information systems (based in part on the Anthony model) is clearly incomplete, for it offers no guidelines for identifying or explaining strategic information systems opportunities. Friedman in analyzing critiques of the Nolan model, suggested that, while evolution through the first four stages of the model was generally observable, the arrival in the 1980s of 'strategic systems introduced a new stage that changed quite fundamentally the concept of how IS/IT evolves to 'maturity' in organizations and industries. Indeed, it is worth highlighting that stages-of-growth models have been applied to other areas of IS; for example, the evolution of the information centre, where there is empirical support for their evolution through the stages of growth, it is suggested that the various stages of information centre evolution are necessary in order for the information centre to better serve the changing needs of end-users.

In summary, a model of the evolving role of IS/IT in organization is of value aid, while the Nolan model is a useful starting point, it is not altogether satisfactory it only really described events up to the 1980s and since then much has changed. Perhaps a more serious problem with the Nolan model is in the detail of the four or six stages, and the undue emphasis placed by others since on the 'rate of expenditure' associated with each stage:

While this was evolving, relationships with users developed, the effectiveness of any relationship being determined by success to date and the users' awareness of the role computers could play in organizational activity—not because of business priorities, but due to the ease with which computers could be applied. Accounting was likely to be far more advanced in computer use than marketing, and if the T)P department' reported to Finance then that relationship was likely to be very effective—but possibly at the expense of relationships with more business critical parts of the enterprise. Occasionally, the role of IS/IT in the organization was reviewed but the focus on current issues and problems often prevented an overall picture being seen.

Up to this point, the main driving force had been managing computer resources and activities, with the effort applied, in proportion, to the technical and application difficulties, without much regard for the value to the business of the applications. To achieve effective Information

(Systems) Management, a new top-down approach was required—a ‘Strategy’ for the management of IS/IT, associated activities and resources throughout the organization. This should be based on a defined role for IS in the enterprise—but that, in turn, depends on the role of IS in relation to the outside world.

Hirschheim described it in terms of a three-stage model. The stages are described as:

1. **Deliveiy:** IS issues are mainly internal—improving the ability to deliver and support the systems and technology. Achieving top- management credibility as a valuable function is a prime objective. This means improving delivery performance, not necessarily providing users with fthat they really need.
2. **Reorientation:** establishing good relationships with the main business functions, supporting business demands through the provision of a variety of services as computing capability spreads through the business. The issues focus is extended outside the T)P department’ and a key objective is to provide a valued service to all business function management. Different areas will benefit differently without regard to business importance.
3. **Reorganization:** the high level of awareness created both ‘locally’ in the business area and ‘centrally’ in senior management creates the need for a reorganization of responsibilities designed to achieve integration of the IS investment with business strategy and across business functions. A key objective becomes the best way of satisfy- ing each of the differing business needs through a coalition of responsibilities for managing information and system

#### **11. 1(b) THE DATA PROCESSING AND IS ERAS: THE LESSONS LEARNED**

There have been essentially three parallel threads of evolution that have enabled more extensive and better information systems to be developed:

- 4\* **Hardware**—reducing cost and size, improving reliability and connectivity, enabling the system to be installed closer to the business problem.
- + **Software**—more comprehensive and flexible operating software and improved languages, enabling business applications to be developed more quickly, with greater accuracy and by staff with less experience.
- ◆ **Methodology**—ways of organizing and carrying out the multiplicity of tasks, in a more coordinated, synchronized and efficient way to enable ever more complex systems to be implemented and large projects to be managed successfully.

The ‘data processing’ approach is problem focused to ensure that the ‘automation’ through IS/IT of those tasks achieves the required efficiency improvements and thus benefits—the required return on investment.

The problems of developing DP systems are generally well known, if not fully resolved, in most organizations. Consequently, they have been addressed most comprehensively. Even in the future, perhaps more than 50% of all IS/IT investments will be about improving efficiency—‘data processing’ in their philosophy..

As more ‘data’ became stored in com pvttter systems, managers realized that using the information could increase the effectiveness of decision making in their departments. Database software seemed to provide the means to give the necessary flexible access to information via online enquiry and analysis systems. Coupled with **emerging** modeling tools, new **decisioiA-support** systems provided managers with the facility to manipulate data in ways not previously



possible. This required managers to think about the information they used and how they *used* it.

However, managers do not use data in predefinable, structured ways. Neither do managers rely solely on “hard facts” in their decision making. The methods used successfully to construct large volume structured DP systems did not work given the vagueness of the requirements. Neither could the cost involved be justified easily, given the intangible nature of the benefits and the potentially short life of the systems. Return-on-investment calculations did not look as attractive for MIS as they did for DP, even though both could be based on ever-reducing hardware costs.

The legacy of process-based DP applications, each one optimized in its construction to maximize efficiency, was often at best a fragmented data resource, at worst a chaotic mess of data with little or no integrity. Database disciplines required a heavy user involvement in data entry, a tedious and difficult task. Frustration developed as large restructuring projects were undertaken to reorganize data and applications into integrated data-based systems to enable MIS to be developed. Even when this was complete, the databases often proved inflexible—the users did not get the information in the way they needed it. IS specialists spent inordinate amounts of time on data analysis and design, and then still had to write mundane retrieval systems. The response to the problem by IT suppliers was to introduce new languages—fourth-generation languages (4GLs)—which were easy to use on well-defined data, relational databases to overcome the constraint of rigid structures and personal computers to free the user from the tangled web of IS development. In particular, the personal computer brought with it the ‘spreadsheet’, which enabled considerable analytical scope without the need for programming. Most IT departments eventually identified the need for new user-support services.

Unfortunately, two actors served to confuse the progress in evolutionary terms that even the best-managed companies were achieving:

1. ■ How was the large new investment required in hardware and software—many hundreds of workstations, networking costs and multiple licenses for software packages—to be justified? This re-focused management’s attention on technology rather than its use—the much-quoted word convergence distracted management from a need to ensure that their systems and information were appropriate and effective before throwing technology at the problem. Those organizations that succeeded with office automation were those who applied the lessons learned in successful DP and MIS investments to the extension of technology use. The rationale for investment had reverted, in many cases, from ‘business pull’ to technology push and the management style often regressed accordingly.
2. How should the new applications and supporting technology be managed and, even more critically, who should be responsible? Should the role of the IT unit be extended or should such systems be the responsibility of users? Were the new office systems an extension to a department level of personal computing or an integral part of the organization’s information processing ability and resources? How did the management of personal computing and office systems relate? As the new ‘strategic’ potential of IS/IT began to be appreciated in the mid-1980s, most organizations were still wrestling with the problems of managing concurrent DP and MIS applications based on rapidly-evolving technology. Policies, planning, organization structures and processes were established to control and coordinate the increasingly diverse and complex requirements. Good practice in the planning and management of DP and IS was hard won after a long fight. The extended business role, now envisaged, did not undo that requirement—much of the future investment would be of a

- "traditional" nature and would produce more benefits if well planned and managed. DP and MIS applications might be less glamorous but management should equally expect them to be more certain of success.

## **11.2 EVOLUTIONARY MODELS THE THREE-ERA MODEL**

Thus far in the evolution of the role of information systems and technology in organizations, two eras have been identified and discussed. There is, in fact, a third era that began in the early 1980s and provides a focal point for this book. This third era can be referred to as the strategic information systems era. Although it is tempting to simplify nearly 50 years of often-haphazard, uncertain progress with the benefit of hindsight into three, albeit overlapping, eras, it must be remembered that it is never that simple. A 'three- era model' is proposed from which a number of insights can be drawn that help in planning or developing strategies for the future. While the three-era model is easy to criticize as being over simplistic, it has proved popular with a number of IS /IT theorists and researchers. Hence, many useful analyses are available from which a pattern of conclusions can be drawn. It is first worth clarifying the fundamental differences and interdependencies of the three eras.

### **The prime objective of using IS/IT in the era's differs:**

- Data processing to improve operational efficiency by automating information-based processes;
- Management information systems to increase management effectiveness by satisfying their information requirements' for decision making;
- Strategic information systems to improve competitiveness by changing the nature or conduct of business (i.e. IS/IT investments can be a source of competitive advantage)

The objectives of DP and MIS are, strictly speaking, a subset of the SIS objective to improve competitiveness. But this tends to be achieved indirectly by using IS/IT to improve current business practices. For example, the focus of business process re-engineering (BPR) is often seen as improving competitiveness, but this is achieved through process redesign taking into account the capabilities of IT in providing new and innovative design possibilities. While the SIS objective is more immediately related to the business, success in achieving the DP and MIS objectives can contribute considerably to business success, and further improvements are always possible as IT capabilities are enhanced and the cost reduces.

## **11.3 E-BUSINESS AND E-COMMERCE**

There are two other concepts that are important to discuss particularly given the prominence both have received: e-business and e-commerce. Since the mid-1990s, both concepts have entered the everyday vocabulary of managers and, having observed activity in many organizations such as the appointment of Directors of e', 'e-managers' and 'e-Czars' and the fact that many have developed 'e-strategies', suggests that e-commerce and e-business are being treated as something new and different from seeking out opportunities to deploy IS/IT. This should not be the case. Literally, e-commerce refers to the conduct of commerce or business electronically- essentially using Internet technologies. In the 1980s, electronic commerce was already a reality, in this instance referring to inter- company trading, specifically the exchange of business documents, using electronic data interchange (EDI). EDI was a cumbersome technology, requiring the use of a third party a

value-added network supplier or VANS) to facilitate information flow, but it did enable business partners to reduce the costs of exchanging business documents such as orders, invoices and price lists with each other. Indeed, the advent of Financial EDI the issuing of electronic payment instructions and receiving remittance notices electronically—was seen as closing the loop between purchaser and supplier. Of course, all parties involved had to adhere to particular technical standards in exchanging information and, as has been the case throughout the history of IT, a variety of different EDI standards emerged. Industries such as automotive, banking and retail had their own standards to define message structures. The United Nations did attempt to bring some uniformity to these diverse standards through UN/EDIFACT (United Nations/EDI for Administration, Commerce and Transport), but with mixed success.

More latterly, the emergence of WAP (Wireless Application Protocol) has made it possible for mobile devices (phone, personal digital assistant [PDA], etc.) to connect up to the Internet, thereby permitting everything from 'browsing the Net' to engaging in business transactions while on the move. M-commerce has been coined to refer to the use of mobile devices for the conduct of business transactions while t-commerce refers to a similar use of television.

E-business, on the other hand, has come to refer to the automation of an organization's internal business processes using Internet and browser technologies. At one extreme, we have the 'pure play' dot.coms, whose business models are often portrayed as being totally web- or Internet- enabled, often reaching out directly to customers. However, unless the product is digitizable, such companies do not exist totally in the virtual world. In industries such as retailing, manufacturing and transportation, the physical aspects overpower the virtual logistics still wins the day, not glossy websites as many dot.coms have found to their detriment. At the other extreme, we have companies who have 'web-enabled' selected business processes using Internet technologies. Such companies still operate in the physical world and seek to develop a 'bricks and clicks' strategy to integrate the Internet with their mainstream operations.

#### **KEYWORDS: E-BUSINESS, E-COMMERCE**

#### **REVIEW QUESTIONS**

#### **SHORT QUESTIONS**

1. Explain briefly the three Era Model.

#### **LONG QUESTIONS**

1. Give the detailed view of the history of the IS
2. Explain the evolutionary models in IS

#### **SUGGESTED READINGS**

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar



## BUSINESS RE-ENGINEERING

### STRUCTURE

- 12. Objectives
- 12.1 Introduction
- 12.2 Types of System
- 12.3 Advantages of System Approach
- 12.4 Typology
- 12.5 Case Study
- 12.6 Avoiding Hype
- 12.7 Business Re-Engineering
- 12.8 Review questions
- 12.9 Suggested readings
- 12.10 Solution to self check exercise

### 12. OBJECTIVES

After reading this lesson, students would be able to answer + Concepts regarding Information Systems + Business re-engineering

#### 12.1 INTRODUCTION

The system provides information on the past, present and project future and on relevant events inside and outside the organization. It may be defined as a planned and integrate system for gathering relevant data, converting it in to right information and supplying the same to tii concerned executives.

The information system provides procedures to record and make available information, concerning part of an organization, to assist organization related activities. Before moving ahead with further elaboration of IS it is very important to define information and system.

Information is a necessary and vital input in any decision making process in an organization. Davis & Olson have defined information as data that has been processed into a form that is meaningful to the recipient and is of real 8s perceived value in current or prospective actions or decisions.

So information is processed form of data and it reduces uncertainty and triggers action Type of information

The types of information are directly related to the activities that use the' information.

- 1 Functional information is used by functional activities. Many functional activities contain information processing activities which may record information in and receive informatio from an information system. Examples of information activities are

Processing a shipment order Paying employee wages Processing a sale order

- 2 The second type of information is MANAGEMENT INFORMATION deals wiftmanagemen^ activities which are less detailed but of longer duration as compared to functt information. The management activities are scheduling jobs, **hiring** and fmnI staff managing departmental budgets, organizational performance against objecuves, decid g

new strategies.

The other part of IS is the system. System may be defined as set of elements which are joined together to achieve a common objective. The set of elements of a system are input, process, and output. A system has one or multiple input(s), these inputs are processed through a transformation process to convert inputs into outputs, but when we attach feedback and control elements to any system it is known as CYBERNETIC SYSTEM.

#### **SELF CHECK EXERCISE 1**

1. What is the purpose of information system in an organization?

#### 12.2 **TYPES OF SYSTEM**

4\* Abstract and Physical system

4\* Deterministic and Probabilistic system

4\* Open and Closed system

+ User machine system

+ An Abstract System is an orderly arrangement of interdependent ideas or constructs, which may or may not have any counterpart in the real world. For example a system of theology which is an orderly arrangement of ideas of god and relationship of humans with god

+ The Physical System is generally concrete operational system made of people, materials, energy, and other physical things. E.g. transportation system, computer system,

+ Deterministic System is one in which the occurrence of all events is known with certainty. E.g. correct computer program which performs exactly according to a set of instructions.

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4\* While Probabilistic System is one in which the occurrence of events cannot be perfectly predicted. E.g. warehouse and its contents. Given a description of the contents at a given point, the contents at the next point in time could not be perfectly predicted.

4\* An Open System interacts with environment and thus exchanges information, material, energy with environment including random and undefined inputs. Open systems are adaptive in nature as they tend to react with environment in such a way so as to favor their existence. All living systems are open systems

\*\*• Closed System is one which does not interact with environment; such systems are isolated from environment. E.g. the computer program is relatively closed system.

+ In User Machine system both humans and machines perform some activities in the accomplishment of objective. The machine elements are closed and deterministic whereas the human elements are open and probabilistic.

The systems approach provides a model based on system concepts which is claimed to be applicable to an unrestricted set of situations. We may define a model as an abstract representation of reality. There are three types of models

1. Predictive models are used for predicting the future and therefore are used for planning
2. Normative models suggest the best action to be taken in a given situation
3. Descriptive models are useful for deeper understanding of a situation under investigation. This model is based in "DIVIDE AND CONQUER" principle where a situation is divided into smaller parts using the concepts of inputs/outputs and

partitioned from other systems using the concepts of boundary and environment. The model further provides a typology of systems from open to close depending on the degree of interaction with the environment.

### **Self Check Exercise 2**

1. What are the different types of system?
2. What are the different types of models?

### **12.3 ADVANTAGES OF SYSTEM APPROACH**

1. The system approach provides an informal start to understand and describe a situation using intuitively familiar notions of input, output and process. The decomposition of processes is useful method of analyzing complex processes. The notion of the importance of a control system often highlights the fact that one is missing or ineffective.

A system description is often simple enough for it to be used as a tool for communication between individuals accompanied by a suitable explanation. Thus IS provides a means for processing information to improve the efficiency and effectiveness of the organization. There are two parts in definition

#### **4\* Structure and functioning of IS**

- \* Organizational context of IS i.e. the information is recorded this information concerns a part of organization as it relates to sales department, recording information such as items sold, their quantities and the prices. There are procedures to record and make available the information then there is close relationship between information system and the organization. The IS satisfies the information needs of required activities

Secondly it provides automated procedures which assist activities.

Thirdly the system is useable and acceptable to organization.

### **12.4 TYPOLOGY**

IS can be categorized into various types

1. Transaction Processing System (TPS) —TPS processes transactions i.e. just automation of day to day activities of the organization. The TPS does not provide any information to the managers which can be used for decision making. TPS takes input as data and gives output as data. Now a days as competition is increasing so organizations need that type of information system which can be used to facilitate decision making process. So organizations are moving forward to develop a refined model of TPS and the solution came in the form of MIS
2. Management Information System (MIS) - MIS is one step ahead of typical TPS. Whereas TPS only provides data the MIS provides information which facilitate the decision making process for the managers. The objective of MIS is to provide right information to right person at right time. The information provided by MIS can be used for short range as well as for long range planning but mainly the domain of MIS is at management control level.  
MIS the term is generally understood as user machine system for generating and providing information to support operations, management and decision making functions in an organization by utilizing computer hardware and software, manual procedures, models for analysis, planning, control and decision making and strong well developed database.

Again in spite of all the merits of MIS there is limitation of that MIS is primarily for the management control level but in this era of competitive world the managers at the strategic planning level have to take quick and important decision and these decisions have far reaching implications for the organization. So organizations need a dedicated IS for the top management level and answer is DSS

3. Decision Support System (DSS) — If MIS is considered as refined model of TPS then DSS is the refined model of MIS. Again DSS provides information which can be used for decision making process but DSS is made specifically for the strategic planning level managers.. Also DSS is interactive in nature i.e. the top level manager can ask what if analysis. This is one of the important application of DSS the managers can view different prospective of the problem and know the possible implication of the decision on various important attributes. So with help of DSS, an organization can do SENSITIVITY ANALYSIS
4. Executive Support System (ESS) — The ESS is the special kind of DSS. DSS is for all the top level managers but sometimes organization needs specific type of DSS considering the requirements as well as the personality of managers. For this ESS is developed but ESS has got limited usage because it is tailored made for managers and for particular requirements.  
Business Expert System Since the invention of computers every possible efforts are made that computers should display human like intelligence. With the advancements that are made in the field of Artificial Intelligence this dream can be fulfilled. In the terms of IS we term it as KNOWLEDGE BASED IS. Business Expert System is Knowledge Based Information Systems that uses the knowledge of specific area and act as expert.

### Self Check Exercise 3

1. What are different types of Information System?

### 12.S CASE STUDY

Otis elevator uses Otisline to achieve the responsiveness and quality essential to compete in the elevator service business. Otisline is a commercial system for dispatching mechanics to elevators requiring service. It uses a centralized system for database containing complete service records for each elevator installed. Prior to Otisline, the local Otis field office would dispatch mechanic during the normal working hours, whereas answering services used a duty roster to dispatch mechanics after hours and on weekends and holidays. These answering services often handled multiple elevator service companies and rarely displayed great interest in ensuring that elevator service calls were answered promptly. Record keeping related to service calls was haphazard.

Otisline improved service by handling all calls for service at a centralized service center that handles 9000 calls per day. Highly trained often multilingual operators use complete information about each elevator to make sure the right mechanic gets to the site promptly. The system maintains detailed records and reports exception situations such as elevators with high levels on maintenance.

The use of information system also extends to the service technicians and to the elevators, single handheld computers linked to Motorola nationwide wireless network ARDIS, Otis field service technicians across the country can communicate instantly with a central office in Connecticut for the technical assistance and job dispatching. Communication can be initiated from a location as remote as the inside of an elevator shaft. Before this wireless network was



available, field workers needing to contact the office were forced to secure the elevator, leave the work site, and sometimes wait on hold while the elevator was out of order. Additional enhancements include remote elevator monitoring, direct communication with trapped passengers, jmd monthly reports on each elevator for subsequent analysis of performance patterns. Customers purchase the remote monitoring function for an additional monthly charge. It uses a microprocessor to report elevator malfunctions to the dispatching office via modem. In some cases this information can be used to fix problems before they cause elevator failure.

Beyond supporting the dispatching function, Otisline serves central conduit for exchanging crucial information among field service mechanics, sales people, design and manufacturing engineers, and managers. For example salespeople use Otisline to access an integrated database used for providing immediate quotes to customers.

Thus by centralizing the dispatching and the attaining the better control of the maintenance process Otis elevator succeeded in giving customers better service than otherwise available. Aside from supporting better maintenance, the infrastructure that supports Otisline is used to provide information to salespeople and as the basis of additional revenue from remote monitoring.

#### **12.6 AVOIDING HYPE: BEING REALISTIC ABOUT WHAT INFORMATION SYSTEMS CAN DO:**

1. One of many aspects of business- since information systems are one of many components of the business, attributing business success to this one component is often an exaggeration.
2. Often a competitive necessity- Some strategic information systems are built not to achieve competitive advantage but because these systems have become a competitive necessity. This happens when providing the same capabilities competitors already have or working on becomes a de facto requirement to succeed in a market.

The typical cycle of competitive advantage followed by competitive necessity starts with an innovation that achieves temporary advantage through information systems. Competitors recognize their disadvantage and try to catch up. Eventually the competitive innovation becomes a requirement for doing the business.

Even when a system requires an enormous investment, competitors can still catch up by sharing development and operational cost. Companies can band together directly in a consortium. They can also work with a software firm interested in developing and selling such a system.

3. Not a silver bullet- The use of strategic information system is not a guarantee to provide competitive edge. Some information systems absorb huge amount of effort and then fail before they are put into operation. Even an initial success does not guarantee that a system will provide sustainable competitive advantage, advantage that other firms cannot counter effectively. Therefore the main issue about sustainability is how long any single system or capability will provide advantage before it is copied, or even surpassed by competitors. This is the nature of competition since most features or capabilities can eventually be copied or equaled in some way. The most sustainable source of competitive advantage is the firm's human resources, its major business processes, and its special resources such as patents or land that can not be copied.

#### **12.7 BUSINESS RE-ENGINEERING**

One of the hottest concepts to arrive on the management agenda in recent years is that which has been labeled business process re-engineering or BPR for short. First articulated in the late 1980s as a result of research at the Massachusetts Institute of Technology, it has become the

means by which many organizations are seeking to emulate the transformations achieved by the early pioneers. Companies such as Ford, Hewlett Packard, First Mutual, Taco Bell, Hallmark Cards were shown to have achieved significant improvement in the performance of selected areas of their business by redesigning the processes through which work in organizations is performed.

The redesign of business processes continues to be a popular approach taken by organizations to improve performance. While the concept has attracted negative press over the years, some of it warranted, we find today that it often appears under a number of guises such as customer service initiative, e-procurement project or major cost reduction—all demanding significant redesign of business processes. While this book is not setting out to cover re-engineering approaches in any depth, it is nevertheless pertinent to consider the subject alongside the development of an IS strategy, for a number of reasons:

- + In developing the IS strategy, a thorough understanding of the business strategy is essential. Most re-engineering initiatives will spring from, and be part of, the business strategy.
- + In many instances, the early work in developing an IS strategy is first to flesh out the details behind the headlines in the business strategy, and this means working with the business areas to help determine what those business initiatives will be and their expected contribution to business objectives. These could include reengineering initiatives.
- 4\* Most, if not all, re-engineering initiatives have a significant IS/IT element, which will be accommodated in the IS strategy, and need to be allocated the same priority that the business places on the change program.
- + There is a common need in both IS strategy development and business re-engineering to build up a model of the business as it currently exists and other potential models of how it will look following transformation or evolutionary change.
- + Success in re-engineering, as with the development and implementation of an IS/IT strategy, demands a strong business-IS function partnership.
- 4\* Designing or redesigning business processes to take advantage of IS/IT capabilities is essential if the traditional problems of automating poorly-designed processes or inefficient work practices through IT are to be avoided.

Much has been written about the role of IS/IT in business re-engineering. In particular, there are conflicting views as to whether IT is the driver for re-engineering, or an enabler or one of the means of implementation. Davenport and Short argued for the first of these, although they recognize its role in the other two, insisting that two key questions must be asked:

- ◆ How can business processes be transformed using IT (based on a full understanding of the capabilities of IT)?

4\* How can IT support business processes?

Many organizations have not adequately or systematically addressed the first question, such that IT has barely been exploited at all in such situations. Teng and colleagues suggest that IT is an enabler, but that its potential role should be overtly recognized and incorporated in an 'integrated business process redesign planning model'. This they describe as a 'policy loop', which combines business strategy and IS/IT strategy. Within this overall process are two subsidiary

loops', one concerning business innovation (with little IS/IT involvement), the other dealing with implementation, where IS/IT becomes critical for achieving the benefits of change.

The relationship between IS/IT and BPR can be summed up whereby IS/IT has to be considered in different ways at the different stages of identifying, evaluating and implementing 'radical' process change. This enables a reconciliation of the fundamental questions of impact and alignment of IS/IT strategy development with the rationale for 're-engineering' initiatives.

In the past, the most effective IS strategies have assiduously sought to be developed in line with the business strategy, so that change initiatives could be worked out on as broad a basis as possible, and certainly not confined to IT development work. The main difference between these and current business re-engineering schemes is often in the name applied to the program. Piecemeal approaches mean that gains in the individual processes fail to translate into improvements in the performance of the organization as a whole top management often fails to define future operations clearly, and the extent to which competitive edge requires superior customer service, manufacturing efficiency or innovation. Re-engineering in practice often addresses non-critical business activities. Arguably, some BPR initiatives are being adopted either to gain publicity, or to further the careers of senior acting as the change agents.

Management may confuse re-engineering with other, perhaps related, business improvement programmes, such as total quality management and quality circles concerned with the quality of the products either to gain publicity, or to further the career of senior acting as the change agents.

Consequently, processes may not be accurately identified, and the organizations tinker with the aspects of the business considered easier to change and from which performance improvements are easier to measure. Often aligned with the standards such as BS5750, process rationalization and automation have not yielded the dramatic improvements organizations expect.

Short-run financial pressures on management might mitigate against the longer-term returns of re-engineering, profit and earnings per share taking precedence over market share and competitive positioning. Consequently, many BPR initiatives experience the problems of the lack of resources and senior management support and as a result there is pressure to abandon the programme. The amount of senior management time or resistance to change may also lead to abandonment.

Re-engineering cannot normally be driven from the bottom due to the need for a broad view of the organization, and top level guidance to promote cross-functional involvement. Without guidance and direction from the top level, change is unlikely to be forthcoming. An exception might occur where re-engineering programmes are initiated by the IT department, and the senior management is receptive to change and encourages bottom-up decision making. But this is not recommended. Re-engineering requires a considered of jobs, structure, values, beliefs, a management and measurement system, in addition to process redesign. Unless all these features are considered equally, re-engineering will not achieve change throughout the organization. Similarly a lack of focus specific re-engineering projects distracts people from the main objectives of the organization. Senior managers insulated from day-to-day operations and unable to envisage the processes of change are unlikely to be capable of championing a re-engineering programme. Unless other managers can persuade their superiors of its values, organizations will not reengineer. BPR represents a major commitment a radical approach to information system development within the overall context of a re-examination of business processes as a whole within

the organization. It therefore has links with both the systems approach and the strategic information systems. It is unlike computerizing existing systems which was feature of the traditional approach. BPR is a total approach, involving top management, total organizational restructuring, and a change in the way people think. The practicalities behind Hammer and Champy's assertion that: if the technology can be purchased by all the organizations, a company will always be playing catch up with the competitors who have invested heavily in large-scale information systems linked to functional activities which will be result of traditional systems development. Critical success factors could be used to evaluate the success of the re-engineering initiatives and might include for example

- 4\* Customer satisfaction
- 4- Net profit and return on capital
- 4\* Expertise in credit and risk management
- 4\* Staff satisfaction
- 4\* Asset valuation

During a reengineering programme, IT should be regarded as an essential enabler, not a key driver of change. Information systems people should be involved in the early stages of planning, but normally should not be leaders of the change process. Other considerations could be The way the company is organized The manner in which work is conducted. The existing operational systems. Failure to address all these concerns simultaneity is likely to lead problems. Following BPR, a cultural change is inevitable and the indicators of such change include

- 4\* A flatter organizational structure
- 4\* A focus on customers
- 4- Greater teamwork
- 4\* Coaching rather than direction
- 4\* A facilitative style amongst teams, leading to a more widespread understanding of the roles of others

To enable BPR, it may necessary to recruit a re-engineering team consisting of, for example, strategists in information systems, and business analyst with computer skills, organizational development specialists, and organization and methods expert. Customers service teams may be used to have focus on future business and rectify operational problems. Clearly, a balance must be struck between maintaining the authority of the management and empowering the workforce to make decisions and become more self sufficient. In many cases a substantial change in the senior management team has been necessary during the re-engineering. Perceiving a personal threat to status and authority, many senior managers have balked at the extent of the changes necessitated by BPR. Conversely, however successful BPR can significantly enhance the image of organizations and the personal images of the champions. According to the Devenport and Short, information systems and BPR have a recursive relationship. On the one hand, IT usage should be determined on the basis of how well it supports redesigned business processes. On the other hand, BPR should be considered within the realms offered by information systems. The combination of information systems and BPR presents commercial organizations with the opportunity radically to change the way in which the business is conducted. The increasing complexity of the environment has presented organizations with the threats and challenges. The need to maximize the performance of the interrelated activities rather than individual business functions, combined with the opportunities offered by information systems, has meant that a new approach to achieve a sustainable competitive advantage. Consequently, organizations need to ensure the close

alignment of information systems The following steps of the process redesign are crucial to the success of BPR

4\* Develop business version and process objectives

4\* Identify processes to be redesigned

4\* Understanding and measure the existing process, identify information systems levers which will help to push the changes 4\* Design and build a prototype

Following re-engineering, organizations have further problems which require resolution to ensure the long term impact of BPR which necessitate

4\* Further process improvement 4- Changes to the organizational structure

4\* New skill requirements as a result of changes in workforce activities and responsibility 4\* Monitoring information systems

Further, the future direction of information system infrastructure should be ratified at the highest levels, to ensure that an adequate commitment of financial resources. The long-term and radical nature of BPR has resulted in a diversity of experiences. The interpretation of BPR within each organization determines the pace and impact of changes. BPR has been particularly successful in service and financial organizations, which have traditionally relied on IT. The role of information system differs in accordance with the ambition of management to utilize its capabilities in the re-engineering processes, as well as extent and sophistication of the information system prior to reengineering. Organizations need to keep abreast of the changes in technology supporting the information systems which could improve their ability to improve. Whether BPR will have a significant impact on the prosperity of organizations will not be known for some time. Certainly, many businesses are questioning the rhetoric associated with the BPR. Analysis of organizations currently undertaken BPR provides material for future research, especially with respect to the availability and application of advanced technology in the department of information technology. In addition re-engineering organizations may provide the opportunity to develop the models and frameworks applicable to specific business domains. There is not a consistent view of BPR because of following reasons. The long term and radical nature of BPR has resulted in a diversity of experiences. The role of information systems differs according to the ambition of management to utilize information systems capabilities in the re-engineering business processes, as well as the extent and sophistication of the applications prior to re-engineering. We have seen that BPR is influenced by the systems approach and strategic considerations. Automatic tools are useful in analyzing the complex processes and enabling rapid applications development. Prototypes can be used to assess the new systems. The participation of the people at all levels within the organizations is crucial. This includes the enthusiastic participation of information systems people in supporting role as part of the BPR team. It also includes the involvement of a leadership of strategic management, which deals with the planning approaches. Perhaps it has rather less to do with structured approach because although both emphasize processes, BPR is very much at a meta-level with crosses functional boundaries. Structured approaches concern the analysis and design of the single process.

**KEYWORDS: INFORMATION SYSTEM, BUSINESS RE- ENGINEERING**

**REVIEW QUESTIONS**

**SHORT QUESTIONS**

1. What is information system. Explain briefly
2. Explain the functions of information system.

**LONG QUESTIONS**

1. Explain various types of information system in an organization.
2. Explain in detail business re- engineering

**SUGGESTED READINGS**

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar

**SOLUTION TO SELF CHECK EXERCISE (CHAPTER 12)**

1. *The information system provides procedures to record and make available information, concerning part of an organization, to assist organization related activities. Before moving ahead with further elaboration of IS it is very important to define information and system.*

**SELF CHECK EXERCISE 2**

1. *Abstract and Physical system*  
*Deterministic and Probabilistic system*  
*Open and Closed system*  
*User machine system*
2. Predictive model, Normative model, Descriptive model

**SELF CHECK EXERCISE 3**

1. Management information system,  
Transaction processing system  
Decision support system  
Executive support system



Lesson No. 13

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MANAGEMENT INFORMATION SYSTEM, DECISION SUPPORT SYSTEM & STRATEGIC  
INFORMATION SYSTEMS

**STRUCTURE**

- 13. Objectives
- 13.1 Introduction
- 13.2 information requirement analysis.
- 13.3 Alternative classification of planning framework
- 13.4 Top-down alignment of information systems and business strategies
- 13.5 Information value and information system investment
- 13.6 Review questions
- 13.7 Suggested reading
- 13.8 Solution to self check exercise

**13. OBJECTIVES**

After reading this lesson, students would be able to answer 4\*

Working of Information systems

4\* Process of analyzing the information requirements.

4\* Planning framework of Information systems.

4\* Business strategies in Information systems.

4\* Value of Information and investment in Information systems

**13.1 INTRODUCTION**

The term **Information Systems** (IS) refers to the interaction between people, processes, and technology. This interaction can occur within or across organizational boundaries. An information system is not only the technology an organization uses, but also the way in which the organization's people interact with the technology and the way in which the technology works with the organization's business processes. The Information System consists of five parts which include: people, procedures, software, hardware, and data. Information systems are distinct from information technology in that an information system has an information technology component that interacts with the people and processes components.

Information systems support different types of decisions at different levels of the organizational hierarchy. Major types of Information systems include structural databases and information management software that can include the following;

4\* Transaction Process Systems (TPS)

4\* Enterprise Collaboration Systems (ECS)

4\* Management Information Systems (MIS)

4\* Decision Support Systems (DSS)

4\* Executive Support Systems (ESS)

It is a business application of the computer. It is made up of the database, application programs and manual and machine procedures. It also encompasses the computer systems that do the processing. The database stores the subjects of the business (master files) and its activities (transaction files). The application programs provide the data entry, updating, query and report processing. The manual procedures document how data are obtained for input and how the system s

### **13.2 INFORMATION REQUIREMENTS ANALYSIS PROCESS: REQUIREMENTS ELICITATION, ANALYSIS AND SPECIFICATION**

Information requirements analysis is the process of understanding the customer needs and expectations from a proposed system or application. Requirements are a description of how a system should behave or a description of system properties or attributes. It can alternatively be a statement of 'what' an application is expected to do. Given the multiple levels of interaction between users, business processes and devices in global corporations today, there are simultaneous and complex requirements from a single application, from various levels within an organization and outside it as well. The Information requirements analysis process covers the complex task of eliciting and documenting the requirements of all these users, modeling and analyzing these requirements and documenting them as a basis for system design.

A dedicated and specialized requirements analyst is best equipped to handle the job. The requirements analysis function may also fall under the scope of Project Manager, Program Manager or Business analyst, depending on the organizational hierarchy. Requirements analysis and documentation processes are critical to project success. Requirements engineering is an emerging field which deals with the systematic handling of requirements.

#### **Need for requirement analysis**

Studies reveal that inadequate attention to Information requirements analysis at the beginning of a project is the most common cause for critically vulnerable projects that often do not deliver even on the basic tasks for which they were designed. There are instances of corporations that have spent huge amounts on software a project where the end application eventually does not perform the tasks it was intended for.

Companies are now investing time and resources into effective and streamlined Software requirements analysis processes as a prerequisite to successful projects that align with the client's business goals and meet the project's requirement specifications.

#### **Steps in the information requirements analysis process**

- I. Fix system boundaries:** This initial step helps in identifying how the new application integrates with the business processes, how it fits into the larger picture and what its scope and limitations will be.
- II. Identify the customer:** In more recent times there has been a focus on identifying who the "users" or "customers" of an application are. Referred to broadly as the 'stake holders', these indicate the group or groups of people who will be directly or indirectly impacted by the new application.
- III. Requirements elicitation:** Information is gathered from the multiple stakeholders identified. The Requirements Analyst draws out from each of these groups what their requirements from the application are and what they expect the application to accomplish.

#### **Problems faced in Requirements Elicitation**

1. Ambiguous understanding of processes
2. Inconsistency within a single process by multiple users
3. Insufficient input from stakeholders
4. Conflicting stakeholder interests
5. Changes in requirements after project has begun



A Requirements Analyst has to interact closely with multiple work-groups, often with conflicting goals, to arrive at a bona fide requirements list. Strong communication and people skills along with sound programming knowledge are prerequisites for an expert **Requirements Analyst**.

#### **Tools used in Requirements Elicitation :**

Traditional methods of Requirements Elicitation included stakeholder interviews and focus group studies. Other methods like flowcharting of business processes and the use of existing documentation like user manuals, organizational charts, process models and systems or process specifications, on-site analysis, interviews with end-users, market research and competitor analysis were also used extensively in Requirements Elicitation.

However current research in Requirements Analysis Process has thrown up modern tools that are better equipped to handle the complex and multilayered process of Requirements Elicitation.

#### **iv. Requirements Analysis Process**

Once all stakeholder requirements have been gathered, a structured analysis of these can be done after modeling the requirements. Some of the Software Requirements Analysis techniques used are requirements animation, automated reasoning, knowledge-based critiquing, consistency checking, analogical and case-based reasoning.

#### **v. Requirements Specification**

Requirements, once elicited, modeled and analyzed should be documented in clear, unambiguous terms. A written requirements document is critical so that its circulation is possible among all stakeholders including the client, user-groups, the development and testing teams. Current requirements engineering practices reveal that a well-designed, clearly documented Requirements Specification is vital.

Requirements specification involves scoping the requirements so that it meets the customer's vision. It is the result of collaboration between the end-user who is often not a technical expert, and a Technical/Systems Analyst, who is likely to approach the situation in technical terms. The software requirements specification is a document that lists out stakeholders' needs and communicates these to the technical community that will design and build the system. The challenge of a well-written requirements specification is to clearly communicate to both these groups and all the sub-groups within.

To overcome this, Requirements Specifications may be documented separately as

**4\* User Requirements** - written in clear, precise language with plain text and use cases, for the benefit of the customer and end-user  
**4\* System Requirements** - expressed as a programming or mathematical model, addressing the Application Development Team and QA and Testing Team.

Requirements Specification serves as a starting point for software, hardware and database design. It describes the function (Functional and Non-Functional specifications) of the system, performance of the system and the operational and user-interface constraints that will govern system development.

#### **vi. Requirements Management**

Requirements Management is the comprehensive process that includes all aspects of requirements analysis and additionally ensures verification, validation and traceability of

requirements. Effective requirements management practices guarantee that all system requirements are stated unambiguously, that omissions and errors are corrected and that evolving specifications can be incorporated later in the project lifecycle.



### 13.3 Alternative classification of planning framework

Planning is the process of deciding what will be done, who will do it, when the  $\Delta V$  will do it, how it will be done and what are the desired results.

Following table shows that Information system planning requires addressing these questions at several levels.

Issue	Strategic level	Project level
Who?	What are the responsibilities of IS department and user Dept? Which vendors will perform major functions?	Who will work on each project? Who will decide how the business process should operate?
What?	What are the major things that the IS department must do so that the firm can achieve its goals?	What specific qualities are required in the IS?
When?	What are the major completion dates that the firm can rely upon?	When will the individual steps in each project be completed?
How?	What technique will be used to do the work?	How will system development techniques be used to produce the desired results?
Desired results?	How will business processes change in terms of detailed operation and controllable results?	What will be the deliverable results from each step in each project?

At the **strategic level**, the questions are about the firm's overall priorities and goals for Information Systems, and the technical and organizational approaches that will be used.

At the **project level**, the questions are of two types: first what specific capabilities are required in each system and second, who will do what and when will they do it to produce specific results.

Information System planning should be integral part of business planning. Business

planning is the process of identifying the firm's goals, objectives and priorities and developing action plans for accomplishing those goals and objectives Information System planning is the part of business planning concerned with deploying the firm's Information System resources including people, hardware and software.

#### **Difficulties in Information System planning**

1. **Difficulty assuring consistency with plans and objectives:** A fundamental problem with planning is that individual departments within companies have their own priorities and business practices and often have difficulty working toward a mutually beneficial plan. This issue is significant if a large organization attempts to develop an Information System architecture and infrastructure that spans departments and boundaries.
2. **Difficulty building systems:** Large Information Systems are complex creations that often take years to build, and involve many organizational, political and technical trade offs. In many system development efforts, only a small cadre truly understand what the system is trying to do and how it will operate both organizationally and technically.
3. **Difficulty maintaining IS performance:** Each of elements of the IS framework points to things that can go wrong with Information System. Regardless of whether the system performs as it was designed, the customer may be dissatisfied for a variety of reasons. The products and services produced by the IS may not have the cost, quality, reliability and conformance expected by its customers.
4. **Difficulty collaborating with IT professionals:** Business professionals and IT professionals sometimes talk past each other as if they come from different worlds. Anyone who has dealt with lawyers, doctors or math teachers recognizes the resulting frustrations. Professionals may have difficulty in translating their specialized knowledge and world view into terms non professionals understand.

#### **Alternative planning framework**

Following is a series of alternative planning framework

1. **Support the firm's business strategy with appropriate technical architecture, standards and policies:** Finding the right balance between centralized and decentralized decision making is crucial. If people or departments plan, build and manage their own systems according to their own requirements, opportunities for coordination and economics of scale are lost. In large companies, immense amount of time and efforts are spend trying to bridge the technical gaps and inconsistencies between multiple systems that roughly do the same task such as generate paychecks or keep track of purchases.  
Although different firms have come up to different conclusions about the balance between centralization and decentralization, most have concluded that some issues should be decided centrally.
2. **Evaluate technology as a component of a larger system:** Specific hardware and software products should always be evaluated in their own right and as a component of an overall system. The latest hardware and software may have little impact if the training and support for participants is inadequate or if right data is not available.
3. **Design IS to be maintainable:** Anyone who has ever tried to remodel a house recognizes

the value of designing Information System to be maintainable. Information System users whose main computer experience is with their own spreadsheets often misunderstood why it takes so long to build and implement IS.

4. **Recognize the human side of technology use:** A people are a part of the system. A technically spectacular system may fail if its human participants are unwilling or unable to play their part effectively. Similarly, even technically primitive systems are often successfully implemented when supported and understood by active participants.
5. **Support and control technical system:** Important as human side of the system is, the technical side should also be supported and controlled. Information System needs care and maintenance in much the same way as cars and houses. If care and maintenance are ignored, systems gradually degrade and become more prone to failure from overloaded databases, incorrect data, faulty documentation or human error. This leads to the question who should do maintenance work. This is in the hands of centralized groups. These groups often have greater technical depth than individual functional departments.

#### **Planning role of the Information System and user departments:**

A firm's IS department is usually responsible for producing the IS plan in conjunction with user department's such as marketing and finance. As happens in other department, managers in the IS department start the planning process by reviewing their progress on the existing plan. They look at special problems such as system approaching technical obsolescence. Information System managers also look at the needs of their own department such as training, hiring, and personnel development.

#### **SELF CHECK EXERCISE 1**

1. What is information requirement analysis?
2. What are the difficulties faced in information system planning?

#### **13.4 TOP-DOWN ALIGNMENT OF INFORMATION SYSTEMS AND BUSINESS STRATEGIES**

The term Information Systems refers to the interaction between people, processes, and technology. This interaction can occur within or across organizational boundaries. An information system is not only the technology an organization uses, but also the way in which the organization's people interact with the technology and the way in which the technology works with the organization's business processes. Information systems are distinct from information technology in that an information system has an information technology component that interacts with the people and processes components.

The Information System consists of five parts which include: people, procedures, software, hardware, and data. There are various types of information systems, for example: transaction processing systems, office systems, decision support systems, knowledge management systems, database management systems, and office information systems. Critical to most information systems are information technologies, which are typically designed to enable humans to perform tasks for which the human brain is not well suited, such as: handling large amounts of information, performing complex calculations, and controlling many simultaneous processes.

Following figure shows the Information system's top-down approach. The trapezoid surrounding the business process, participants, information and technology indicates that those four elements constitute the system performing the work. The Information system's outputs are the products and services received and used by its customers.

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Fig: Top-down approach to information systems framework

1. Customers are the people who use and receive direct benefits from the product, and services produced by IS. They may be external customers who receive the organization's products and services or they may be internal customers inside the organization.
2. The products and services are the combination of physical things, information and services that are produced for its customers. The Information system exists to produce these products and services.
3. The business **process** is the set of steps or activities that are **performed** within **the Information system**. These steps may be defined precisely in some situations **or** may be relatively unstructured in others.
4. The participants are people who perform the work steps in business process. Some participants may use computers and IT extensively, while others may use little or no technology.
5. The information is the information used by participants to perform their work. Some of the information may be computerized but other may never be captured on a computer.
6. The technology is the hardware, software and other tools and equipment used by participants while doing their work. The technology considered to be within Information system is dedicated to that system, whereas technical infrastructure is shared with other systems.

Regardless of whether an Information system is operating consistent with its initial design or its formal documentation, but it's not fully successful unless it generates products and services customers want. Including the related infrastructure and context that is outside the system is a reminder that any system's operation and success depends to some extent on external factors beyond the direct control of the system's participants and managers.

Note that the Information system is different from business process, **business function**, organization and other terms commonly used to describe business operation. An Information system is smaller than an entire organization or business function because organizations contain multiple work systems and operate through them. On the other hand, an Information system is larger than a business process because it includes the participants, information and technology. Looking at the entire Information system does not diminish the importance of business process, which is pictured at the core of Information system and which is the fundamental element of a value chain. Looking at the entire Information system helps in seeing whether the business process actually operates as it was designed.

The links between the elements in the Information system framework are represented as bidirectional arrows for two reasons. First the bidirectional arrows imply that the elements should

**Need for a balanced view of a system:**

Following are three viewpoints that are used frequently when thinking about IS that uses IT extensively.

- **Focussing on business results**
- **Focusing on people and organization:** Emphasize the work environment, job satisfaction and whether the organization is operating smoothly.
- **Focusing on technology and information:** Emphasize processing of information in databases, transmission of information and whether the technology is operating efficiently and effectively.

**Business Strategies:** Strategy is the direction and scope of an organization over the long-term: which achieves advantage for the organization through its configuration of resources within a challenging environment, to meet the needs of markets and to fulfill stakeholder expectations"?

In other words, strategy is about:

Where is the business trying to get to in the long-term?

2. Which markets should a business compete in and what kind of activities are involved in such markets?

How can the business perform better than the competition in those markets?

What resources (skills, assets, finance, relationships, technical competence, facilities) are required in order to be able to compete?

What external, environmental factors affect the businesses' ability to compete?

What are the values and expectations of those who have power in and around the business?

**Strategy at Different Levels of a Business:** Strategies exist at several levels in any organization - ranging from the overall business (or group of businesses) through to individuals working in it.

**Corporate Strategy** -It is concerned with the overall purpose and scope of the business to meet stakeholder expectations. This is a crucial level since it is heavily influenced by investors in the business and acts to guide strategic decision-making throughout the business. Corporate strategy is often stated explicitly in a "mission statement".

**Business Unit Strategy** - It is concerned more with how a business competessuccessfu/ly in a particular market. It concerns strategic decisions about choice of products, meeting needs of customers, gaining advantage over competitors, exploiting or creating new opportunities etc.

**Operational Strategy** -It is concerned with how each part of the business is organized tro deliver the corporate and business-unit level strategic direction. Operational strategy therefore focuses on issues of resources, processes, people etc.

**How Strategy is Managed - Strategic Management**

In its broadest sense, strategic management is about taking "strategic decisions". In practice, a thorough strategic management process has three main components, shown in the figure below:

**Strategic Analysis** - This is all about the analyzing the strength of businesses' position and understanding the important external factors that may influence that position. The process of Strategic Analysis can be assisted by a number of tools, including:

**PEST Analysis** - it is a technique for understanding the "environment" in which a business operates for a business Planning. It is a technique that builds various plausible views of possible futures, competition or alternatives. It is a technique for identifying the forces which affect the level of

**Market Segmentation** - it is a technique which seeks to identify similarities and differences between groups of customers or users.

**Directional Policy Matrix** - it is a technique which summarizes the competitive strength of businesses operations in specific markets.

**Critical Success Factor Analysis** - it is a technique to identify those areas in which a business must outperform the competition in order to succeed.

**Strategic Choice:** This process involves understanding the nature of stakeholder expectations (the "ground rules"), identifying strategic options, and then evaluating and selecting strategic options.

**Strategy Implementation:** Often the hardest part. When a strategy has been analyzed and selected, the task is then to translate it into organizational action.

**Modern Theory of Business Strategy:** Strategizing is much more than just visioning, forecasting and planning. In the new rapidly changing economy, all substantive issues of strategy have been redefined as issues of implementation. Today, strategizing is concerned with the match between the internal capabilities of the company and its external environment. "The modern subject of business strategy is a set of analytic techniques for understanding better, and so influencing, a company's position in its actual and potential marketplace".

#### **SELF CHECK EXERCISE 2**

1. Discuss various tools to analyse strategic process

#### **13.5 INFORMATION SYSTEM VALUE AND INVESTMENT:**

##### **How Decision Makers Value Information**

Accurate, timely, and relevant information saves companies both time and money through increased efficiency, improved productivity, and rapid deployment of innovations. For example, access to research results allows agencies to benefit from the experiences of others and avoids costly duplication of effort. While the benefits are substantial, they are difficult to quantify and the value of information goes unrecognized. An extensive literature review and interviews with State DOTs, private companies, and transportation libraries reveal that access to information yields both time and cost savings by improving decision making, expediting solutions, and avoiding unnecessary research. The benefits of information and information services are summarized below.

**Information Saves Time:** Quality information saves time in numerous ways like by avoiding duplicative efforts, stopping unproductive activities, modifying design approaches, or correcting bad information

**Information Yields Customer Satisfaction:** Although many organizations cannot quantify the value of information or information services, the perceived value among users is high. Users discuss value in terms of whether, and to what extent, the information provided meets their expectations and needs.

### **Importance of Demonstrating the Value of Information Services**

The report of a task force of the Special Libraries Association, stressed that information professionals must be prepared to prove the value of their services through one or more of the following approaches: 1) measuring time saved; 2) determining actual monetary savings or gains; or 3) providing qualitative, anecdotal evidence of value. Employing these approaches, the task force cited a number of case studies demonstrating the value of information professionals to their organizations. For example, the Georgia Technical Institute installed a campus-wide on-line library system in 1986 and reduced the costs of its literature searches by \$1.2 million a year. Another case study was the library at the Houston division of Texas Instruments. In a survey conducted by the library, users' responses indicated that the library saved the company \$268,800 a year and increased users' job proficiency by a value of \$523,000 a year. From an annual investment in the library of \$186,000 a year, Texas Instruments netted \$959,000 in benefits—a 515 percent rate of return.

The cost of a professional user's time and effort to obtain information elsewhere far exceeds the cost of providing a library. These estimated savings increase significantly if obtaining the library material prevents the need for primary research, provides confirmation of research, stops an unproductive line of research, modifies a research design, or modifies a method of analysis. In these cases, the estimated savings are \$310 per journal article, \$650 per book reading, and \$1,090 per internal report.

### **Information system Investment**

The decision to build an information system is an investment decision, as is the decision about which capabilities to include in the system. There are some strategic issues related to these investments, such as building systems that support the business plan, the information system architecture, and the company's approach to distributed processing and outsourcing.

Although these ideas provide some guidance and eliminate some options, there is no ideal formula for deciding which systems and capabilities to invest in. In practice, many IS departments allocate a percentage of their available time to different project categories such as enhancements, major new systems and user support. But within each category they still need to decide which systems to work on and what capabilities to provide. Cost/benefit analysis can help with decisions. **Cost/Benefit analysis**

It is the process of evaluating proposed projects by comparing estimated cost/benefit and costs. Cost/benefit analysis should occur only after the proposed project has been analyzed and designed in enough depth to clarify key issues in each aspect of a current proposed system. If the benefits are greater than costs, the project may be worth pursuing. Cost/benefit analysis can be used in several ways. First, it is a planning tool to help in deciding whether the new system is a worthwhile investment compared to other possible uses of resources. In addition, it may be used as an auditing tool to determine whether a project actually met its goals.

Although the idea of comparing estimated benefits with estimated costs sounds logical but it has some limitations. It is most appropriate when the system's purpose is improving efficiency. If



**Following are the key issues for Cost/benefit analysis;**

- Difference between tangible and intangible benefits
- Timing of costs and benefits.

**Tangible and intangible benefits:** Benefits are either classified as tangible or intangible.

Tangible benefits can be measured directly to evaluate system performance; Examples include reduction in the time per phone call, improvement in response time, reduction in the amount of disk storage used etc. Note that tangible benefits may or may not measure in monetary terms.

Intangible benefits affect performance but are difficult to measure because they refer to comparatively vague concepts. Examples of Intangible benefits are better coordination, better supervision, better morale etc. Although all of these are worthwhile but it is often difficult to measure how well they have been accomplished. Even if it is possible to measure Intangible benefits, it is difficult to express them in monetary terms that can be compared with costs.

**Tendency to underestimate costs:** A common flaw of Cost/benefit studies is the under estimate of costs.

Incomplete cost analysis often includes the cost of Hardware, Software and programming but omits other costs related to problem analysis, training and ongoing operation of the system.

Following table separates some of the more apparent costs of IS's from some of the costs that are easy to overlook. Notice that time and effort of user management and staff are easy to overlook in each of the four phases of Information System's.

Phase	Cost easily assigned to project	cost that are easy to overlook
Initiation	Salary and overhead for Information system staff Cost of communication and travel.	Salary and overhead of user staff and Management Other work in favor of work on the project Equipment purchase and installation cost
Development	Salary and overhead for Information system staff Purchase of system Site modifications such as wiring offices Implementation Cost of communication and travel	Salary and overhead of user staff and Mgt-involve in analysis Salary and overhead for Information system staff Salary and overhead of user staff and Mgtinvolved in
Implementation Operation and maintenance	Salary of users during training and initial usage Salary and overhead for system staff # SW license fees predation of HW	Salary and overhead of user staff and Mgt involved in maintenance activities

## Timing of costs and benefit

The cost/benefit streams from an information system project occur at different times. The cost of any information system including the cost of buying the hardware, building or buying the new software and the cost of ownership. The total cost of ownership includes the cost of implementation, operating and maintaining for it. For much information system, the cost of only the implementation is higher than the cost of original development.

**Risks:** A large percentage of Information system projects either fail to attain their goals or attain them only after expenditure of more time and effort than was initially anticipated. Common factors include:

1. Desired benefits are not achieved
  - The project is completed late or over budget
  3. The system's technical performance is inadequate
- User acceptance is low.

Since Information system development is a risky business, decisions about which project to attempt should consider these risks.

**KEYWORDS: INFORMATION SYSTEM, BUSINESS STRATEGIES, VALUE OF INFORMATION**

## REVIEW QUESTIONS

### SHORT QUESTIONS

1. What is information requirement analysis?
2. What are the difficulties faced in information system planning?
3. What is the importance of demonstrating the value of information service

### LONG QUESTIONS

1. Explain the need of requirement analysis in an organisation
2. Explain the process of information requirement analysis
3. How decision maker value information?

### SUGGESTED READINGS

- Strategic Information Systems: Concepts, Methodologies, Tools, and Applications by M. Gordon Hunter.
- Strategic Information Systems: Planning and Implementation issues in Select Organizations in India by D.P. Goyal.
- Strategic Information Systems Management by Kevin Grant Ray Hackney David Edgar

## SOLUTION TO SELF CHECK EXERCISE (CHAPTER 13)

### SELF CHECK EXERCISE 1

1. *Information requirements analysis is the process of understanding the customer needs and expectations from a proposed system or application.*
2. *Difficulty assuring consistency with plans and objectives, Difficulty building systems, difficulty maintaining IS performance, Difficulty collaborating with IT professionals*
3. **Strategy at Different Levels of a Business:**  
Strategies exist at several levels in any organization - ranging from the overall business (or group of businesses) through to individuals working in it.

**Corporate Strategy** -It is concerned with the overall purpose and scope of the business to meet stakeholder expectations. This is a crucial level since it is heavily influenced by investors in the business and acts to guide strategic decision-making throughout the business. Corporate strategy is often stated explicitly in a "mission statement".

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**Operational Strategy** -It is concerned with how each part of the business is organized tro deliver the corporate and business-unit level strategic direction. Operational strategy therefore focuses on issues of resources, processes, people etc

### SELF CHECK EXERCISE 2

1. PEST ANALYSIS, Market segmentation, **Directional Policy Matrix, Critical Success Factor Analysis, Strategic Choice, Strategic implementation**