LOVELY PROFESSIONAL UNIVERSITY

PLANNING AND MANAGING IT INFRASTRUCTURE

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SYLLABUS

Planning and Managing IT Infrastructure

Objectives: To provide the essentials of IT for managers. To enable the student to implement strategic planning using IT. To provide understanding of project management and IT outsourcing. To provide corporate governance using IT. To enable the student to understand various collaboration tools and wireless networks. To enable the student to understand the concept of e business. To enable the student to understand the concept of ERP. To provide the awareness of business intelligent tools for database applications. To impart the skills required for the management of knowledge. To enable the student to develop architecture of an enterprise.

Sr. No.	Description
1.	**IT for Managers:** Need of understanding IT, Function IT, Network IT, Enterprise IT, Role of Managers vis-à-vis IT
2.	**Strategic Planning:** Understanding Strategic Planning and its Relationship with IT, What is Strategic Planning Process
3.	**Project Management:** Need of Understanding Project Management, Project, Project Variables, Project Management Knowledge Areas **Business Process and IT Outsourcing:** Outsourcing, Offshore Outsourcing, Need of Outsourcing, Issues Associated with Outsourcing, Planning Outsourcing Process
4.	**Corporate Governance and IT:** IT Governance, Mitigating IT-related Risks, Need of Understanding IT Governance, IT Governance Frameworks, Business Continuity Planning
5.	**Collaboration Tools and Wireless Networks:** Various Collaboration Tools, Wireless Communications Fundamentals, Cell Phone Services, Wi-Fi, Wi-Max
6.	**E-Business:** Need, B2B, B2C, C2C, E-governance Applications, Mobile Commerce, Advantages and Issues with E-business
7.	**Enterprise Resource Planning:** ERP, ERP and CRM, ERP and SCM, Benefits of ERP, ERP Issues, ERP System Implementation Process, ERP Best Practices, ERP Trends
8.	**Business Intelligence:** Dataware House, Business Intelligence Tools, Business Performance Management
9.	**Knowledge Management:** Applications and Benefits, Best Practices for a KM Project, Supporting Technologies
10.	**Enterprise Architecture:** Importance, Software Architecture Styles, Developing an Enterprise Architecture

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Unit 1: IT for Managers

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Objectives

After studying this unit, you should be able to:

- Discuss the need of understanding IT
- State the functions of IT
- Explain the concept of network IT
- Explain the concept of enterprise IT
- Describe the role of managers in IT

Introduction

The importance of Information Technology (IT) infrastructure is recognised more and more within companies and corporations. The sooner companies realise the importance of building and leveraging IT infrastructure, the better will be the value and higher the return they can capitalise on. Information technology managers are responsible for implementing and maintaining an organisation's technology infrastructure. Businesses rely on a central information processing system to support efficient data management and communications. The IT manager monitors the organisation's operational requirements, researches strategies and technology solutions, and builds the most cost-effective and efficient system to achieve those goals. IT managers may work out current and future IT needs by consulting with people at all levels about the current work systems and deciding how improvements could be made. IT manager analyses the information needs of an organisation and develop technological solutions to satisfy those needs. Also IT manager prepare or direct IT policy and plan strategy development.

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1.1 Need of Understanding IT

Information technology is related to studying, designing and developing information related to computers. This field is growing at a very fast pace over the last few years and according to successful and well-known people in the IT sector, this growth is expected to remain stable. Due to the robust growth, millions of jobs have been created in this field. However, it is very essential for us to understand what the importance of information technology is.

Information Technology (IT) has become a strategic necessity. Unless we believe in IT and act on it, there is every chance of becoming a footnote in the annals of History. IT has become a vital component of successful businesses and organisations.

Managers are expected to identify opportunities to implement information systems to improve the business processes. Managers are also required to lead Information System (IS) projects in IT. Information Technology has become a major facilitator of business activities. It is also a catalyst of fundamental changes in the structure, operations and management of organisations. IT can be used to:

1. Perform high-speed, high-volume, numeric computations.
2. Provide fast, accurate and inexpensive communication within and between organisations.
3. Store huge amounts of data in an easy-to-access yet small space and allow quick and easy access.
4. Automate semiautomatic business processes and manually done tasks.

IT has been used for improving productivity, reducing cost, enhancing decision making process, enhancing customer relationships, and developing new strategic applications. The business paradigm has completely shifted from being sellers market to buyers market. Customers have become the focal point of any business. The business environment is no more as stable as it used to be and has become much more competitive. It became mandatory on the part of the organisations to make full use of IT to survive. IT has become one of the standard components of an organisation.

The individuals are supported by IT to fulfil their roles. The management and the business processes have become IT oriented. Organisation structure and strategy are also supported by IT. Whenever an external or internal pressure is felt by an organisation, IT helps the organisation to plan critical response activities. The changed government policy may create a pressure on an organisation. But such a pressure is distributed over a long period as government gives enough time to organisations to respond to changed policies. But if there is a change in the behaviour of consumers, the organisation should be able to identify the change. Moreover, they should be able to come up with a solution fast. IT helps an organisation to anticipate and stay ahead of problems. The organisation can take proactive measures rather than fire fighting measures. An organisation can use an IT supported strategic system to increase their market share. IT can help an organisation negotiate better with their suppliers. Maintaining and improving quality of products and processes in an organisation needs regular support, vigilance and innovation.

Business Process Reengineering (BPR) has become the need to the day for every business; BPR involves changing business processes in an innovative way. IT plays a major role in BPR. Internet and Intranet help an organisation in changing its business processes to reduce cycle time and time to market a product. IT makes information available to employees with different level of access. As a result, employees can be given more independence to make decisions.

There are many businesses which are in need of the software packages for satisfying their operational as well as functional needs. For fulfilling this requirement, these companies sign deals with the software manufacturing companies. Information technology is useful in ensuring

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the smooth functioning of all the departments in a company such as the human resource department, finance department, manufacturing department and in security related purposes. The companies in the automobile manufacturing sector are able to get rid of any sort of errors or mistakes in the proper functioning of the tools used for designing and manufacturing purposes. Due to the development of the information technology sector, the companies are being able to keep themselves aware of the changes in the global markets.

The software applications and the hardware devices are known to be the main elements of the use of information technology. The web browsers, the operating systems, ERP's and special purpose applications are the software which is used in information technology. IT plays an important role in easily solving the mathematical problems and in the project management system. It has a great use in the automated production of sensitive information, automated upgradation of the important business processes and the automated streamlining of the various business processes. It has also played an important role in the areas of communication and automated administration of entire systems.

Importance of information technology in educational sector is well-known. It helps the students as well as the teachers in studying the course material easily because of fast access. Studying the subjects with the help of online libraries and dictionaries has made grasping and increasing the knowledge easy for the students. The inclusion of information technology in the syllabus in schools, colleges and universities has helped them in grasping the subject well and getting their basics cleared. Since, many educational centres have the online grading system; it has been a boon for the parents of the children to keep a tab on their performances. Parents can also get the details of the attendance record of their child in schools.

Importance of IT in management is quite significant. It helps the managers in adapting to the new business processes and to predict the possible impact of new technologies. The managers can benefit from the efficiently prepared computer packages and the electronically stored confidential information. With just a single click of the mouse, they can have the relevant information in front of their screen. However, to be able to handle these software packages in a better way, the managers should have undergone quality training in information technology. Taking this need into consideration, many corporate companies are seen taking special efforts for the development of these soft skills by training programs prepared by experienced software professionals.

This sector is growing at a fast pace and is creating ample opportunities for deserving candidates with great pay packages.

Notes IT has been used extensively for productivity improvement, reducing inventory and maintaining quality. Management Information System (MIS) and Decision Support System (DSS) have been used to help management in decision-making process.

Caution The ERP, a strategic tool, heavily uses IT to integrate business processes of an organisation.

Self Assessment

Fill in the blanks:

1. ..... involves changing business processes in an innovative way.

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2. IT helps the ..... in adapting to the new business processes and to predict the possible impact of new technologies.

3. Due to the development of the information technology sector, the companies are being able to keep themselves aware of the changes in the ..... markets.

1.2 Functions of IT

Information technology, commonly abbreviated to IT, is vital in our new technical world. IT engineers try to ensure that brand-new software and hardware can be programmed and built to meet the demands of businesses and individuals, while IT technicians are important in fixing the equipment that is being used.

The function of IT is to allow us to be productive in a new digital environment, where emails can be sent to colleagues around the world at the speed of light. The innovation of IT also means that it has never been easier to use cloud-based systems that allow us to upload our work to the Internet accessing it with ease and efficiency from anywhere that has connectivity.

As a department, IT workers are also the lifeblood of any business in ensuring a system which is used for work is constantly available and free of any technical problems. After all, what is the point in shifting to digital to become more productive if you are always having trouble with using the new technology? Most importantly, they will also hold the function of backing up vital data guaranteeing that a business isn't at risk of losing vital information such as customer databases, product prototypes and financial records.

Of course, not all of the new employees within a company will be talented in the key skill of applying IT. This is why IT workers need to be patient and able to train up new colleagues in using specialist systems which have been created exclusively for a company.

Finally, the function of IT is to ensure that an environment can remain safe and free of viruses or, in the case of an email network, free of spam that can slow down progress and affect a person's access to their own account. It can seem like an intense battle to work in IT, but it's a rewarding job for many.

Some of the IT functions are discussed below.

- ***Communication:*** IT enables efficient and high-speed communications. Email, teleconferencing and Internet calling allow employees to stay in touch with their colleagues around the world. IT also enables virtual collaboration.

Example: U.S. employees can conduct product design meetings with their Chinese or Indian colleagues using video-conferencing.

Employees can log into their company servers from home, and travelling managers can respond to emails or download documents using mobile technologies. Companies can also set up internal social media sites that allow employees to exchange information and collaborate on projects.

- ***Data Management:*** Data management is a key IT function. Technological advances and increasingly complex businesses have increased text, voice and video data traffic inside organisations. Businesses use databases to store, manage and access vast amounts of data, including customer information, inventory records, employee files and financial documents. However, small and large businesses must guard against unauthorised accesses, which may compromise data integrity and raise privacy concerns.

- ***Marketing:*** IT is increasingly central to a company's marketing operations. These may include creating advertising copy on powerful graphics computers, placing ads on social

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media sites and processing online orders on an e-commerce site. Small business owners can use online search engines to research consumer buying trends and identify profitable marketing opportunities. Software systems also allow companies to track visits on websites, clicks on Internet ads and the amount of time spent on each section of an e-commerce sites.

- ***Process Improvement:*** Companies can leverage IT to improve processes and achieve cost savings.

Example: A small business could insist on paperless communication inside the company to save on printing and duplication costs, while achieving reliable data transfer.

Virtual collaboration saves on expensive travel costs and improves productivity because employees do not have to spend hours or days on planes and at airport terminals. IT can make human resource processes more efficient.

Example: A small business can organise Internet-based training sessions for its customers and employees, thus saving cost and time.

- ***Enterprise Resource Planning:*** Enterprise resource planning is the use of software systems to link together business functions, including sales, manufacturing, human resources and accounting. Management gets access to real-time aggregated information, which helps in operational and strategic decision-making. For large companies, these systems can be expensive and the installation can disrupt operations for months. However, small businesses can install the software modules for one function at a time, thus minimising costs and disruptions.

Task Explain how IT enables efficient and high-speed communications.

Self Assessment

Fill in the blanks:

4. Businesses use ..... to store, manage and access vast amounts of data.
5. ..... is the use of software systems to link together business functions, including sales, manufacturing, human resources and accounting.

1.3 Network IT

Information and communication are two of the most important strategic issues for the success of every enterprise. While today nearly every organisation uses a substantial number of computers and communication tools (telephones, fax, and personal handheld devices), they are often still isolated. While managers today are able to use the newest applications, many departments still do not communicate and much needed information cannot be readily accessed.

To overcome these obstacles in an effective usage of information technology, computer networks are necessary. They are a new kind (one might call it paradigm) of organisation of computer systems produced by the need to merge computers and communications. At the same time they are the means to converge the two areas; the unnecessary distinction between tools to process and store information and tools to collect and transport information can disappear. Computer networks can manage to put down the barriers between information held on several (not only computer) systems.

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Computer networks allow the user to access remote programs and remote databases either of the same organisation or from other enterprises or public sources. Computer networks provide communication possibilities faster than other facilities. Because of these optimal information and communication possibilities, computer networks may increase the organisational learning rate, which many authors declare as the only fundamental advantage in competition.

Besides this major reason why any organisation should not fail to have a computer network, there are other reasons as well:

- cost reduction by sharing hard- and software resources
- high reliability by having multiple sources of supply
- cost reduction by downsizing to microcomputer-based networks instead of using mainframes
- greater flexibility because of possibility to connect devices from various vendors.

Because of the importance of this technology, decisions of purchase, structure, and operation of computer networks cannot be left to technical staff. Management as well has a critical need for understanding the technology of computer networks.

Network IT includes information systems that improve communications and support collaboration among a members of a workgroup.

Example: Wikipedia, Web Conferencing, Electronic corporate directories.

In case of the Network IT all the services are provided with the help of web only.

Example: In this case, one can directly contact other by using web services like video conferencing and many more.

Caution Only with the help of computer networks can a borderless communication and information environment be built.

Self Assessment

Fill in the blanks:

6. ..... includes information systems that improve communications and support collaboration among members of a workgroup.
7. ..... allow the user to access remote programs and remote databases either of the same organisation or from other enterprises or public sources.

1.4 Enterprise IT

Enterprise IT includes information system that organisation use to define interactions among their own employees and with external customers, suppliers and other business partners.

Over the past ten years, information technology has become pervasive throughout our society. We live in a networked world with Internet access from our offices, at coffee shops, at home, and on our mobile devices, such as Blackberry, iPhones, Nooks and Kindles. This rapid advancement has elevated the importance of the IT function. Information technology in the modern enterprise

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has evolved from a back-office component to a core operational constituent that can improve business performance and increase shareholder value.

Information technology now is as important to the enterprise as finance, marketing, and sales. In fact, IT is central to an organisation's success in that it provides critical day-to-day operational support and enables enterprise-wide change. Yet some still view IT only as an internal service bureau available to the business areas to review and execute their requirements as best as possible. That approach may help to create a good company, but not a great one.

The Chief Information Officer (CIO) who leads merely from a technology perspective is relegated to the secondary role of the "IT guy." But the CIO who leads from a broader business perspective earns respect and trust from C-suite peers and from the Chief Executive Officer (CEO). Just as the firm's Chief Financial Officer (CFO) uses financial expertise to drive enterprise strategy, the CIO can leverage technical expertise. Today's CIO has an opportunity to demonstrate a truly executive-level leadership role in defining the enterprise.

How does a CIO lead from a business perspective and gain credibility in the C-suite? The CIO must understand the business — and demonstrate the ability to make difficult business decisions — as well as anyone else in the organisation. This means the CIO must know the company's products and services, profit-drivers, competition and organisational dynamics.

The CIO's level of influence in the C-suite can be elevated by transforming the culture of IT. The CIO needs to develop a technology vision based on the company's business objectives. Technology should become a key component of the business strategy, achieving a unique breadth of power and influence in the organisation.

Managing IT as a business provides several benefits:

- It fosters an entrepreneurial environment for the IT staff, creating more business awareness for tomorrow's leaders.
- It enables benchmarking of costs. And it positions the CIO as a true operational leader.
- A comprehensive IT framework establishes the CIO as a proven executive who can extend influence across other areas, such as administration, operations, and management of business services.

Business and IT management should act as a team, participating jointly in key business-unit activities, such as research and development, customer involvement, competitive assessment, and strategic planning. Companies should reward CIOs based more on how well IT initiatives drive profits and less on completing assigned projects. The CIO should be proactive, not passive. Information technology should help a company set strategic business goals, not simply work on tactical objectives.

Example: The enterprise IT include TPS, ERP, Inter organisational information system, EDI.

In case of Enterprise IT there is no compulsion of web. One can use web also in case of TPS.

Example: When one has to share information then it is to be shared across business functions and all level of management.

Did u know? Chief Executive Officer (CEO) is the corporate executive responsible for the operations of the firm; reports to a Board of Directors; may appoint other managers.

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Task Make distinction between CIO and CEO.

Caselet

Retail, Government to Drive Enterprise IT Spend in India

Information technology industry, which is spending sleepless nights following bleak forecasts for North America and Europe, has a reason to smile. Indian enterprise IT spending across all industries is going to grow by 10.3 per cent to over $39 billion in 2012 as against $36 billion last year.

FDI in Retail

Consumption by Government and Foreign Direct Investment (FDI) in retail are going to be the biggest drivers for this growth, according to Gartner, Inc. that has just come with India-specific findings.

"The retail industry is expected to achieve the strongest growth in percentage terms in 2012, where IT spending is forecast to grow 11.8 per cent. Recent decisions to allow 100 per cent FDI in single brand retail, and up to 51 per cent in multi brand retail, are expected to provide the sector with a significant boost in terms of IT usage and adoption," Mr Derry Finkeldey, principal research analyst at Gartner, said. Businesses are looking to IT to help support the challenges of rapid growth for customer support, supply chain management, optimising business processes or helping to drive innovation in the business. "These demands are being placed while the IT infrastructure within many enterprises may not be entirely in place. IT is also in transition from being viewed as a back-office support function to a frontline .business-focused function," he said.

Source: http://www.thehindubusinessline.com/industry-and-economy/info-tech/retail-govt-to-drive-enterprise-it-spend-in-india-gartner/article2828970.ece

Self Assessment

Fill in the blanks:

8. ..... includes information system that organisation use to define interactions among their own employees and with external customers, suppliers and other business partners.
9. The ..... who leads merely from a technology perspective is relegated to the secondary role of the "IT guy."
10. ..... uses financial expertise to drive enterprise strategy.

1.5 Role of Managers vis-à-vis IT

In today's world, IT Managers can be responsible for many different areas of focus – or just one area. These areas could include Project Management, Server Administration, IT Compliance, Security, Application Development or Websites just to name a few. IT Managers are generally responsible for engaging many areas of the company including finance, operations, distribution, stores (in retail) and/or manufacturing as examples.

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The roles of an IT Manager can vary from company to company. In some companies the IT Manager is responsible for strategic direction and planning, while at other companies the IT Manager may fulfil a purely technical leadership role. Be sure you fully understand this role at your company or during the interview when changing jobs. Also, be aware that as companies grow and change, the roles of the managers will grow and change with it.

This large variation in responsibilities and the constant change in IT organisations and responsibilities can be a great thing for your career. This allows you to start out in a role more suited to your abilities and grow into larger ones. It also means that as the company grows, so must you. Information Technology (sometimes referred to as Information Systems) is a career that requires continued learning and adaptability. New technologies, systems, and processes are created almost weekly.

The bad news is that the role of an IT Manager with all of these key skills and the ever changing landscape is quite often a thankless job. One Director of Fortune 500 retailer was once quoted telling her boss "If everything is working the way it was planned and architected, no one knows I exist. However, when it breaks, everyone knows my name." That is to say that even the best IT Managers get the wind knocked out from under their sails on occasion.

Keep in mind that to many people, an IT Manager can mean many different things. Each department within the organisation will have a slightly different perspective of what they believe your job and your focus to be. This also applies to your boss and his/her superiors.

Some defines the role of a manager as "Getting things done through other people." Some defines management as "Authoritative control over a person or group of people." As you might notice, these definitions are at somewhat different ends of the spectrum. The first represents collaboration while the second the represents control. While both are accurate descriptions, it will be your job as a manager to use the right definition or combination thereof at the right time(s).

The truth is most likely that you, as a manager, will fall more heavily into one of these definitions that the other. You should take some time to evaluate yourself and your style. Then, be cognizant of the style you are most likely to swing to. This will save you sometime down the road as you learn to manage others and conflicts arise.

The catch is that most likely, as you grow in your career and job you are likely to change your style to suit the company and/or culture you are in. So which style will you be? It's hard to tell.

There are many tales of managers who change companies and are shocked to find out that their style of management is completely incompatible with their new company's culture.

Example: A manager directs his/her employees to execute a step by step plan for the rollout of a new application. However, the company culture is very collaborative and the team he/she is now leading expects to be part of the decisions, planning and direction of the project.

One of the most common struggles we hear about with new managers is resentment from fellow team members. Sometimes peers (that are now your employees) will resent the fact that you were promoted and they were not. Others might simply feel that you are not qualified for the job. These issues are very common to new managers, especially if one or more of your peers (now employee) have ever managed before and you have not.

This can be a slow process to get past, and in some cases may require outside help from your superiors and/or your Human Resources department. In most cases however, all that is required is a little time and communication from both parties. This starts by building a relationship with your team. Talk to each person, both in public and private. Learn their talents and recognise the contributions.

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Many new managers will immediately find the political landscape in their new role, whether they mean to or not. Projects and corporate goals create political landscapes and as you make decisions in your new role, you are helping to shape that landscape.

It is important to recognise that while some managers (or non-managers for that matter) do their best to stay out of politics in the workplace at all costs, other managers thrive on it. Politics can come in many different forms, from turf wars over who manages a department or project down to something as simple as what colour a company logo or shirt is.

The point is politics is present at every company and you as an IT Manager should be aware of it. Some politics is necessary. Everytime humans are involved in a decision making process, there are going to be non-objective considerations that have to be made.

Example: Jim is being promoted to a new management role, but Cathy is against it because Jason is Jim's best friend. She believes Jim will play favourites with Jason while hanging her out to dry. This is part of human nature and has to be dealt with.

IT Managers now have many responsibilities (data centres, staff management, telecommunications, servers, workstations, web sites, user support, regulatory compliance, disaster recovery, etc.) and connect with almost all the departments (Accounting, Marketing, Sales, Distribution, etc.) within a company or organisation.

This is both the good and the bad news. At some companies, an IT Manager can have direct inûuence on the strategic direction of the company, suggesting and helping implement e-commerce initiatives, for example. In other companies, an IT Manager is really a technician, a software developer, or network installer. And to complicate things even further, those deûnitions change quickly over time. Yesterday's network installer is today's e-commerce consultant. By the way, at this point, "IT" (Information Technology) and "IS" (Information Systems) have now become synonymous terms. While they are often used interchangeably, "IT" is becoming much more widely used.

Caution Some people may use "IS" to refer to activity related to business software applications, but this use has waned considerably.

1.5.1 IT Manager's Strategic Role

Strategic thinking requires projecting an organisation's needs and activities several years into the future and building capabilities to meet those needs. Organisations expect IT managers to have knowledge of technology trends and assist in strategic planning to incorporate new technologies into acquisitions and training. Other areas of corporate management that depend on the strategic knowledge of IT managers include data security, quality initiatives that use technical solutions and assessment of competition in applying technology. Expect the IT manager's integral involvement in assessing corporate strengths, weaknesses, opportunities and threats — SWOT analysis — from an information technology perspective.

1.5.2 IT Manager's Tactical Role

The IT manager interacts with project managers to help define project scope, schedules, budgets, priorities and milestones. She assists in developing department procedures and working with stakeholders. The IT manager communicates regularly with senior management on status and issues for all IT projects. In some organisations, the IT manager directs the project management office and approves hiring and promotions of IT personnel.

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Did u know? Risk mitigation and resource management among IT projects fall under the IT manager's purview.

1.5.3 Why All Change and Flexibility is Good?

The position of IT Manager can be very challenging. It is extremely varied in scope, allows you to come in contact with a large portion of your company, provides you with opportunities to directly affect the overall direction of your organisation, and is excellent professional experience to acquire. In addition, you get to increase your range of experience; you are forced to (and get to) keep up with the latest changes in technology (so your skill set will always be in demand); and your network of contacts gets large.

As important as all that is, there is an added bonus: In recent years, IT has taken on a strategic value in the roles companies play in the new economy. Information Technology is now a critical component of many companies and the U.S. economy: "IT is the fastest growing sector in the economy with a 68% increase in output growth rate expected between 2002 and 2012 (U.S. Bureau of Labour Statistics)." Not only is your job interesting and rewarding, it is also very important. Dependence on technology is only growing, and issues like security and compliance are making IT more visible throughout the organisation. What more could you ask for?

1.5.4 Why All Change and Flexibility is Bad?

On the other hand, being an IT Manager is a difficult, often thankless, task. Like many service jobs, if you do it superbly, most people don't notice. In addition, the responsibilities differ radically from company to company. Some companies actually have many IT Managers and several layers of management. At others (and this number is shrinking), an IT Manager is a part-time role which someone fills while doing their "real" job.

In addition, the role of an IT Manager can often vary widely within an organisation, depending on who is making the decisions at the time. While the techniques might vary, the "Western Region Sales Manager" knows what his or her role is — get more sales as soon as possible — and that isn't going to vary much from company to company. An IT Manager, on the other hand, can mean many things to many people and the job changes as technology and needs advance and evolve. Addressing all these needs and people can mean that time for "extras" like sleep and meals have to be sacrificed.

As a manager, everyone else's crises become yours. People (your users, your staff, etc.) are demanding quick resolutions to problems, and are looking to you to fix them.

1.5.5 The Value of IT Managers

IT is a brave new world to many of today's corporations. Many executives now know how to use Word, Excel, e-mail, and their handheld Blackberry, but some have little or no understanding of the deeper, more complex issues involved in IT. They imagine IT to be a powerful but complex world where rewards can be magically great and risks are frighteningly terrible. These executives, and their corporations, need professionals to both explain and execute in this new world. This is where you come in.

You can leverage your technical knowledge, experience, and interests with your company's direct proût and loss requirements. Together, you and your company can provide a powerful business combination. Alone, your individual skills and passions can wither into arcane interests, and your business expertise can build models relevant to an economic world decades in the past.

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1.5.6 Develop an IT Strategy

The cosmic question "Why are we here?" applies to corporate departments as well. It is entirely possible that many, if not all, of your staff don't have the full understanding of how the IT department serves the entire organisation. When it comes to their job, they may understand what's critical for today. But, while today is important, it's also vital to know about tomorrow and beyond. If they're looking at the trees, you have to be the one to let them know about the forest. The strategy should include feedback from your employees and should be cleared by your boss, but you should drive its formulation.

Without an IT strategy, you won't be able to align your long-term goals with your short-term responsibilities. You need to have these items decided and written down, so that when your boss tells you to do X, and your employee needs Y, and the other manager down the hall that helped you last week needs Z, you have a clear idea of which task should be addressed in which order. Some companies have huge IT departments, with layers and layers of managers. Organisations of this size have formal IT strategies and sub-strategies.

But many smaller companies don't have formal IT departments with managers, budgets, and expectations. Wherever you are on the size and formal structure spectrum, you should have a strategy. And you should write it down.

Your strategy should include the following:

- Who are your team members? And what can they do?
- Why/how is technology important to your organisation?
- What are your assets?
- Who are your customers?
- What are your customers' needs?
- How do you plan to satisfy these needs?

While this all sounds simple, it's deûnitely not.

Example: Your customers may not even know what their IT needs are. However, the very act of getting this all down on one or two sheets of paper can be of great value.

Determine who Your Team Members are

This seems like a simple task, that is, just list the people in your department. In fact, your team members may or may not be all the people on your staff. You may have someone in your staff who has part-time responsibilities to another department.

This person is on your team, but you can't count on them 100% of the time.

Or, people from other departments, who aren't on your payroll and report to some other remote branch of the organisational chart, could be very useful to your department.

Example: They might call you when they hear about certain problems on the system, or help you when someone in your department is out sick.

These people aren't on your payroll, and they aren't in your department, but they are on your team.

Notes

In addition to determining who the team members are, find out their skill sets and backgrounds. You may know a team member as a cable installer but he may have rudimentary Java skills that the Applications Development team could use. She may be a sales manager who has some project management experience that could help you with the new phone system rollout.

Determine How Important Technology is to Your Organisation

The technology in use can vary tremendously from organisation to organisation. In a law firm, technology might be used simply for word processing, or it might be used to accurately track client billings. Additionally, it could be used to scan and archive documents, so that every single piece of paper related to a case is online where it can be indexed, cross-referenced, and immediately retrieved.

In a retail organisation, technology can be used for all the traditional back office activities (billing, purchasing, etc.) but probably serves its most vital function by helping the store managers to know what products are generating the most sales and proûts, and which should be dropped from inventory. The store might also use it for space planning so that the shelves are stocked in a way that maximises space usage, as well as profitability.

Determine Who Your Customers are and What their Needs are

Whether your customers are other employees, suppliers, consumers, or other businesses, they are the ones you need to serve. Find out who your customers are. Figure out what their needs are. Then spend your time addressing those needs.

Issues to consider include:

- Your customers are not necessarily retail customers (although they could be). More likely, your customers are other internal department in the company and your boss. Different jobs have different customers, and there are departments (like Sales and Marketing) who should spend all day figuring out what their external customers need. IT, on the other and, commonly serves other departments in the company like Sales, Marketing, Accounting, and Management.
- Figure out what your customers' needs are. Are they products or services? Data and information? Reduced costs? Improved efficiency or productivity?
- Ask your customers directly about their needs. Set up meetings with representatives from different departments, ask questions, note the answers, and change the way you're doing business to reflect customer needs and concerns.

Keep Your Department Central to the Company's Operations

Make sure the strategy mentioned in the above section is carefully aligned with the goals of the entire organisation. This is critical. If the needs of your immediate boss are out of alignment with what the entire company is doing, you have a serious problem. Let the rest of the organisation know what you're doing in IT. To many of the other department managers, IT may not mean much more than "the people at the Help Desk that can reset passwords." Periodically, have a meeting with the other department heads. Let them know what you're doing in IT, what you've accomplished, and what you plan to do. With a little luck, light bulbs will start going off. They may see uses for the technology that you hadn't thought of. Make some good discussion going and you may learn a way to deliver a lot more value by slightly modifying your plans.

Notes

Notes In today's corporate world, IT departments are, for the most part, by default in the middle of action. Everyone is becoming aware of the values that computerisation can bring to an enterprise. Wineries, toy shops, bookstores, and sandwich places — supposed havens for the non-technical — now have sophisticated computerised inventory systems, customer service mechanisms, online ordering counterparts, and — gasp — even fax machines to take preorders. Information technology is everywhere.

Self Assessment

Fill in the blanks:

11. The IT manager interacts with ..... to help define project scope, schedules, budgets, priorities and milestones.
12. The role of an IT Manager can often vary widely within an organisation, depending on who is making the ..... at the time.
13. An ..... can mean many things to many people and the job changes as technology and needs advance and evolve.
14. The ..... in use can vary tremendously from organisation to organisation.
15. Organisations expect IT managers to have knowledge of technology trends and assist in ..... planning to incorporate new technologies into acquisitions and training.

Case Study

IT Networking in Government

₹ 6.25 crore. is the amount recovered from an iron-ore exporter in Bangalore. What's interesting is that the tip off came from the department's Tax Information Network. This is only one instance of the phenomenal change brought about by replacing a 55-year-old manual system, with the Tax Information Network, a repository of tax payer information, and allied technology implementations. The Tax Information Network was launched on July 22, 2005. Before the network came on, members of the IT department depended only on market intelligence, random scrutiny and on 'search and seizure' to determine tax evasion. It was difficult to manually match and tie in high value transactions. The sheer number of documents that the IT department was inundated with, made reconciliation almost impossible as well as arbitrary.

The way the system works is simplicity itself. Under the provisions of (AIR) Annual Information Return, agencies like banks and investment funds are required to file a report on transactions above a specified threshold. Then the department uses an intelligent and identity-blind system in tandem with data-mining and AI tools to identify tax evaders. In effect, the tax department can track spending patterns, making compliance the only choice.

Laying out and organising tax filings also enabled the department to pick out information and complete the jigsaw puzzle business entities create. Policing tax payers better is what's prodding the department to consolidate information from all of its 36 regional computing centers to create a single data repository in New Delhi.

Contd....

Notes

While most government agencies struggle with getting buy-in from users, members of the IT department welcomed the computerisation. However, it wasn't a breeze. As with most e-governance projects, the biggest problems were faced at the grassroot level. The department is now pursuing a Business Process Reengineering (BPR) exercise, which is expected to improve intelligence gathering and decision-making capabilities.

Apart from tracking evaders, there's another reason why BPR is being driven with such urgency: an increasing number of assesees. Meanwhile, creating fire-tracks to trap evaders was only part of the battle. There was an immediate need to hose down other fronts that are increasingly open to attack. An ever-growing amount of tax information being unloaded on the system is creating vast fields of data that could go up in flames – leaving the department without a back-up plan. A business continuity site that's being set up in Mumbai and a cold disaster recovery site in Chennai will fix this and allow the department to focus its energies into monitoring almost all tax-related matters on a continuous basis.

With among the highest instances of citizen interaction, the department requires tremendous cooperation from the government – and the department is getting it. Mathur says, "the government is open-handedly and open-heartedly supporting the department." He isn't being euphemistic; the government is paying for IT in the IT department ₹ 1,000 crore of it.

With so much support, the department feels obliged to pro-actively implement the network plan, but it can't do it all. This is why it decided to outsource some of its work to organisations like National Securities Depository Ltd (NSDL), which has been entrusted with the management of the network and three key subsystems: Electronic Return Acceptance and Consolidation System (ERACS), Online Tax Accounting System (OLTAS) and Central PAN Ledger Generation System (CPLGS). With NSDL acting as a clearinghouse for information, the department is free to roll ahead with its BPR project. The results of the re-engineering will go live on June 30, 2006. Part of this rollout will include a new three-tiered architecture, something that is critical to establish the single centralised database in Delhi. Mathur affirms that "everything is totally in place."

It's hard to find fault with his confidence considering that the department won the Golden Icon at the Ninth National Conference on e-governance in 2006. Mathur completely dismisses any chance of failure.

Questions

1. Make a list of benefits of moving from a fully manual system to an IT-enabled one.
2. Research a little about National Computer Centre of India. When was it established and what are its functions?

Source: http://www.cio.in/case-study/it-stands-i-t-department

1.6 Summary

- Information technology is related to studying, designing and developing information related to computers.
- IT has been used for improving productivity, reducing cost, enhancing decision making process, enhancing customer relationships, and developing new strategic applications.
- The function of IT is to ensure that an environment can remain safe and free of viruses or, in the case of an email network, free of spam that can slow down progress and affect a person's access to their own account.

Notes

- Network IT includes information systems that improve communications and support collaboration among a members of a workgroup.
- Enterprise IT includes information system that organisation use to define interactions among their own employees and with external customers, suppliers and other business partners.
- The roles of an IT Manger can vary from company to company. In some companies the IT Manager is responsible for strategic direction and planning, while at other companies the IT Manager may fulfil a purely technical leadership role.
- Organisations expect IT managers to have knowledge of technology trends and assist in strategic planning to incorporate new technologies into acquisitions and training.
- The IT manager interacts with project managers to help define project scope, schedules, budgets, priorities and milestones.

1.7 Keywords

BPR: Business process reengineering (BPR) is the analysis and redesign of workflow within and between enterprises.

CEO: CEO (Chief Executive Officer) is the corporate executive responsible for the operations of the firm; reports to a board of directors; may appoint other managers.

CIO: CIO (Chief Information Officer) is an executive responsible for development, implementation, and operation of a firm's information technology policy.

Enterprise IT: Enterprise IT includes information system that organisation use to define interactions among their own employees and with external customers, suppliers and other business partners.

Information Technology: Information technology is related to studying, designing and developing information related to computers.

IT Infrastructure: The term IT infrastructure is defined in ITIL v3 as a combined set of hardware, software, networks, facilities, etc. (including all of the information technology), in order to develop, test, deliver, monitor, control or support IT services.

Manager: A *manager* is a person who oversees employees or departments in a business.

Network IT: Network IT includes information systems that improve communications and support collaboration among members of a workgroup.

1.8 Review Questions

1. Explain how Information Technology (IT) has become a strategic necessity.
2. What is BPR? How does IT play a major role in BPR? Explain.
3. Discuss the importance of IT in education sector.
4. What are the various functions of IT? Discuss.
5. Explain the concept of network IT with examples.
6. Make distinction between network IT and enterprise IT.
7. What are the major benefits when managing IT as a business? Discuss.

Notes

8. Elucidate the role of managers in IT.
9. How do IT managers handle politics at work? Explain.
10. Describe the steps used in developing an IT strategy.

Answers: Self Assessment

1.	BPR	2.	Managers
3.	Global	4.	Databases
5.	Enterprise resource planning	6.	Network IT
7.	Computer networks	8.	Enterprise IT
9.	CIO (Chief Information Officer)	10.	CFO (Chief Financial Officer)
11.	Project managers	12.	Decisions
13.	IT Manager	14.	technology
15.	strategic		

1.9 Further Readings

Books

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http://www.blurtit.com/q9381618.html

http://www.thegeekpub.com/787/defining-the-role-of-an-it-manager/

http://www.tutor2u.net/business/gcse/enterprise_what_is_enterprise.html

http://www.bls.gov/ooh/Management/Computer-and-information-systems-managers.htm

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Unit 2: Strategic Planning

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Objectives

After studying this unit, you should be able to:

- Define the concept of strategic planning
- Discuss the relationship of strategic planning with IT
- Explain strategic planning process
- Describe the steps included in strategic planning process
- Discuss the components of IT strategic plan

Introduction

Strategic planning determines where an organisation is going over the next year or more, how it's going to get there and how it'll know if it got there or not. The focus of a strategic plan is usually on the entire organisation, while the focus of a business plan is usually on a particular product, service or program. There are a variety of perspectives, models and approaches used in strategic planning. The way that a strategic plan is developed depends on the nature of the organisation's leadership, culture of the organisation, complexity of the organisation's environment, size of the organisation and expertise of planners. Strategic IT planning for your small or medium sized business is important if you want your business to be successful. The right plan for your business should reduce operational costs, speed time to market, improve overall customer service, and be a budget-able investment that will grow with your business. Traditionally, larger companies hire CIOs to create a strategic IT plan, but that is typically too expensive for small and medium businesses.

2.1 Understanding Strategic Planning and its Relationship with IT

There is an old saying that states, "How will you know when you get there if you don't know where you are going?" All successful organisations must clearly articulate their vision, goals, and objectives as a function of their organisational mission. IT strategic planning is important to ensure the technology infrastructure and services support the mission of the business unit or organisation.

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There are many threats to an organisation that test its overall resiliency. Strategic planning is an important method to look into the future to identify risks and opportunities and develop the strategic direction of the organisation.

Strategic planning is a collaborative process involving organisational stakeholders and technology professionals in sessions designed to better understand the future direction of the organisation and how technology can enable the organisation to be successful. Each organisation is unique. Therefore, each strategic plan is unique as well, and should be tailored specifically for an organisation's specific mission.

Strategic planning is a tool for organising the present on the basis of the projections of the desired future. That is, a strategic plan is a road map to lead an organisation from where it is now to where it would like to be in five or ten years. It is necessary to have a strategic plan for your organisation. In order to develop a comprehensive plan for your organisation which would include both long- range and strategic elements, we suggest the methods and mechanisms outlined in this manual.

The plan must be: simple, written, clear, based on the real current situation, and have enough time allowed to give it a time to settle. It should not be rushed. Rushing the plan will cause problems.

The purpose of strategic or long-range planning is to assist an organisation in establishing priorities and to better serve the needs of its constituency. A strategic plan must be flexible and practical and yet serve as a guide to implementing programs, evaluating how these programs are doing, and making adjustments when necessary.

A strategic plan must reflect the thoughts, feelings, ideas, and wants of the developers and mould them along with the organisation's purpose, mission, and regulations into an integrated document

There are a variety of perspectives, models and approaches used in strategic planning. The way that a strategic plan is developed depends on the nature of the organisation's leadership, culture of the organisation, complexity of the organisation's environment, size of the organisation, expertise of planners, etc.

Example: There are a variety of strategic planning models, including goals-based, issues-based, organic, scenario (some would assert that scenario planning is more of a technique than model), etc.

1. Goals-based planning is probably the most common and starts with focus on the organisation's mission (and vision and/or values), goals to work toward the mission, strategies to achieve the goals, and action planning (who will do what and by when).
2. Issues-based strategic planning often starts by examining issues facing the organisation, strategies to address those issues and action plans.
3. Organic strategic planning might start by articulating the organisation's vision and values, and then action plans to achieve the vision while adhering to those values. Some planners prefer a particular approach to planning, e.g. appreciative inquiry.

Some plans are scoped to one year, many to three years, and some to five to ten years into the future. Some plans include only top-level information and no action plans. Some plans are five to eight pages long, while others can be considerably longer.

Quite often, an organisation's strategic planners already know much of what will go into a strategic plan (this is true for business planning, too). However, development of the strategic plan greatly helps to clarify the organisation's plans and ensure that key leaders are all "on the

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same script". Far more important than the strategic plan document, is the strategic planning process itself.

Also, in addition to the size of the organisation, differences in how organisations carry out the planning activities are more of a matter of the nature of the participants in the organisation — than its for-profit/non-profit status.

Example: Detail-oriented people may prefer a linear, top-down, general-to-specific approach to planning. On the other hand, rather artistic and highly reflective people may favour of a highly divergent and "organic" approach to planning.

Strategic planning is extensively needed in the functioning of an IT company or any other organisation because it helps managers identify desired outcomes and formulate feasible plans to achieve their objectives by using available resources and capabilities. Strategic planning must take into account that the organisation and everything around it is changing:

- A consumer like and dislikes change.
- Old competitors leave and new one entered marketplace.
- The cost and availability of raw materials and labour fluctuate.
- The degree of industry and government regulation changes.

Example: If an IT company or any other organisation wants to make software or any product, then it also uses the strategic planning to achieve the more effective results by defining the vision of the organisation, identifying the objectives and goals that support the vision and setting strategies to achieve the goal and identify the initiatives and project.

A comprehensive IT strategic plan generally contains the following:

- Mission and vision statements
- Organisational values
- Stakeholders analysis
- Strength, Weakness, Opportunities and Threats (SWOT) analysis
- Identification of key goals, objectives, strategies and associated action plans
- Identification of performance indicators

Notes The development of a plan requires much probing, discussion, and examination of the views of the leaders who are responsible for the plan's preparation. However, more often than not, the development of the plan is less complicated than is the implementation.

Caselet

Put IT Plan in Corporate Strategy

WHAT happens when managers are overwhelmed by the rapidity and scale of change in IT? To baffle them is the dilemma: "Should we adopt the new technology and take a risk of failure, or forego the new technology and miss an opportunity to add business value?"

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A 'tough call', that is, according to Tata Steel's Managing Director B. Muthuraman, who has penned the foreword to Dinkar's *Strategic Planning in Information Technology*, from Viva Books P Ltd (viva@vivagroupindia.net). Changes brought in by IT need not be 'sudden and spectacular' always, Muthuraman adds, for they can be at a 'basic level' too.

An IT strategic planner should continually do strategic analysis, advises Dinkar. Only then will he be able to point out to senior management, substantial changes in environment. This analysis has to also comprehend the 'resource limitations' of the company, expectations of the various interacting groups, and the effect that the new technology would have.

The author devotes a chapter to 'the value chain in IT' where he highlights a 'different' alignment. "IT strategic planners put in place their own strategic plans which are different from, but in alignment, with the corporate strategic plans." Instead, the corporate plan should include the IT dimension too, "leaving the details" to be worked out by the IT planners.

Watch for 'danger signals', both internal and external, that indicate the existing IT plan as being "out of tune with the environment". Employee discontent, customer complaints and so on, may not be due to IT failure. "Nevertheless, these signs should be treated as signals that call for an analysis of the IT strategic plan." Keep your ears open, therefore.

IT rests on two pillars – not hardware and software, but technology and human resources. With a 'not unusual' attrition rate of 40 per cent, it is necessary to manage the HR carefully. "The success of any organisation whose core activity is IT-related can be judged from its manpower attrition rate."

The most effective methods of retaining people, according to Dinkar are: "Concentrate heavily on training; load them with an adequate amount of quality assignments; and make sure that they are insulated from small hassles."

Source: http://www.thehindubusinessline.in/ew/2004/12/06/stories/2004120600100200.htm

Self Assessment

Fill in the blanks:

1. ..... is a tool for organising the present on the basis of the projections of the desired future.
2. The focus of a ..... plan is usually on a particular product, service or program.
3. ..... strategic planning often starts by examining issues facing the organisation, strategies to address those issues and action plans.
4. ..... planning starts with focus on the organisation's mission.
5. IT strategic planning is important to ensure the ..... infrastructure and services support the mission of the business unit or organisation.

2.2 Strategic Planning Process

The strategic planning process is one that has been used in some form for as long as companies have been in business. A formal top-down model became a popular methodology in the 1970s because it made the process more deliberate. With this model, an organisation's leadership periodically defines an overall strategy which is then communicated throughout the organisation to be implemented.

Notes

This strategic planning process starts with the company's mission to set goals or objectives. With goals in mind, a situation analysis can then be conducted so a strategy can be formulated and ultimately implemented. This type of process is most useful for business-unit-level strategic management. With large corporations, the overarching strategy set by executives applies to managing the businesses' total portfolio.

Example: ABC Corporation is made up of six different, but complimentary companies. The executives of ABC Corp set an overall strategy for the six companies it manages. This strategy focuses on deciding on how to allocate resources among the individual business units and how they can take advantage of synergies to grow the overall business. In turn, the management teams of each of the corporation's business units use the strategic planning process to set the course for their individual companies.

2.2.1 Steps in Strategic Planning Process

The steps in strategic planning process are:

1. Current Situation Analysis
2. Segmentation Analysis
3. Strength, Weakness, Opportunities, and Threat Analysis
4. Core Competencies Analysis
5. Key Success Factors
6. Business Unit Strategy/Business Plan
7. Balanced Score Card
8. Evaluation

These steps are discussed as below.

Current Situation Analysis

The importance of situation analysis is similar to the need to drive the pilings of a skyscraper all the way down to bedrock. This analysis prepares the organisation to tackle the work of completing a useful and valuable strategic plan that provides a competitive advantage.

Step one is to be certain clear Mission and Vision statements are in place reflecting the mind, heart, soul, passion and resources of the owner or stockholders. It is important that these statements are consistently described and understood by all of the employees but especially be the key managers of the business.

The Mission statement describes who we are and what we do as a company. The more that statement differentiates the company from its competition, and the more it recognises its uniqueness and value to customers, the more powerful the Mission statement becomes as a clarifying, directional force. A Mission statement should provide a statement describing the products, markets, corporate culture and overall financial goals of the company. The Mission statement presented below is an example from a company that serves as a distributor to the auto aftermarket.

Example: Mission Statement: To distribute automotive parts to the automobile repair industry, providing customers with quality products, services, and information; to present our company in an honest and trustworthy manner in all transactions; to empower our employees to conduct the business; and provide our company a reasonable and consistent profit.

Notes

The vision statement is the owner's view of where the enterprise should be in the future. The Vision statement is stated in general terms on key measures of importance. The vision includes selective items such as sales volume, market share, market penetration, earnings, customer satisfaction, research and development investment, and relationships with strategic partners. Statements on cost position relative to competitors and productivity or efficiency are also appropriate for the key measurement items discussed in the vision statement. Following is an example of a vision statement:

Example: To be the market leader and the low cost distributor of high quality automotive parts in the Ohio and Indiana market. The right material, to the right place, at the right time, for each customer! At a price delivering value for the customer and a fair return for the company.

Each of the vision items add value only if it has been identified as clearly important to the defined outcome and results of the business as defined by the owner and by the expectations and demands of the market.

While the mission and vision statements are products of the owners or the stockholders they provide important defining parameters for the key managers as they develop a strategic plan. Each of the elements of the strategic plan must be in agreement with and aligned to the mission and vision statements of the business.

The next step in analysing the current situation is the development of Baseline Feedback. This is the collection and compilation of both the internal and external data that can help to define the current situation. The external data includes market, economic and competitive intelligence, customer and supplier information, and benchmark data from both inside and outside of the directly competitive industry.

The final exercise in the current situation analysis is to measure and gain perspective on the degree of convergence or misalignment of employee perception and opinion of the company mission, visions and strategy. It is very important that each and every employee have a consistent mind set relative to the mission, vision, and strategy of the company.

Have each employee or at least the key managers write his or her own statement of company mission and vision. Compare those employee statements to the official version and see if there is any significant divergence of position. It is that alignment which allows for consistency in decision-making and in execution.

In addition, develop an understanding of customer perspective and opinion of the company. Ask the question for example, how do the most profitable customers view the company versus the views of the least profitable customers? How do the same customers view the key competitors? What products or product lines represent the greatest and least profit contribution and why?

A good tool to use is a simple eight to ten question survey. Have each key manager complete the survey. This will provide a measurement of the degree to which there is common and clear understanding of the current situation, the direction, decision-making and decision processing in the company.

Agreement throughout the organisation is a fundamental requirement for optimisation of the results. If the analysis in this stops shows divergence then work to narrow the gaps prior to undertaking strategic planning. If there is considerable agreement then there is a strong platform from which to build a strategic plan with high probability of real long-term benefit. A parallel process of using a simple questionnaire outside of the company with customers and suppliers is also recommended and it too can be of real value in the strategic planning and development process.

Notes

The current situation analysis step is dominated by data collection and analysis. It is also a time to check the validity and buy-in of the company Mission and Vision. It is a time to get feedback on employee perceptions of the company. And, it is a time to explore the value that customers place on the relationship.

This work process provides the foundation for the work of assembling the next four steps of strategic planning into a working document that becomes the strategic plan, the road map for the business plan, and the guide to long-term success for the company.

Task Make distinction between mission statement and vision statement.

Segmentation Analysis: Matching Market Potential and Company Strength

The purpose of this process is to match the company's current or prospective products and services with the market's potential. The alignment of the company's products with the market potential helps focus the strategic planning activities of the company in areas of highest volume potential and highest financial return.

The framework for segmentation analysis suggested here has been used successfully by a number of companies. First, before any consideration of the products and services that the company produces, identify the market segments from the customers' needs perspective.

Market segments are groups of customers who exhibit similar buying decision processes.

Example: One segment of most markets consists of the customers who are very price oriented and buy based on price alone. Other segments may look for services ahead of price.

The basic purpose of this process is to find customers who behave in a similar purchasing manner, and to find how their behaviour is different from other market segments. A common method of market segmentation in consumer markets is to use demographic variables such as age, sex, income, and location to describe segments.

Example: The needs of a 25 to 35 year old college graduate recently married are very different from the needs of an empty nesting couple aged 60 to 65.

The process of segmentation breaks the market into groups who exercise similar purchase patterns and implies how marketers should reach these groups.

There are many ways to segment markets. In addition to demographics, many marketers of consumer products use buying behaviour patterns, psychographic segmentation variables, and lifestyle variables. There is no exact way to segment a market; it is a combination of science and art in understanding the buying behaviour of your current and potential customers.

In business-to-business markets, the type of customer or customer channel, is a common segmentation variable.

Example: Retail automobile customer segments, such as automobile dealers, and retailers of automotive parts exhibit very different buying patterns for automobile repair products and services. The differences between these segments buying behaviour patterns create unique segments.

Notes

Multiple market segmentation schemes are recommended. It is usually the responsibility of the marketing function of a company to develop a precise definition of the market segments. Ultimately in the strategic planning process, these segments will be prioritised and targets will be selected.

The second step in the segmentation process is assessing and assigning the market potential for each segment and determining whether that potential is growing, levelling off, or declining.

The third step is to match or fit the products and services of the company to the various market segments.

Example: Consumer food products such as single servings fit older aged market segments; other food products fit a family with young children. This matching process provides a way of identifying where the company is strong or weak and where the greatest market potential lies.

This process may also have implications for new product development or market growth of the company.

From this last step in the process, management has a framework that allows analysis of:

- Market Segments and Market Potential (without company bias)
- Matching of Existing Products and Services to Segments
- Implications of where the company needs to focus product or market development
- Penetration or market share of various market segments
- Implications for functional tasks such as the sales planning and advertising
- Identification of products, services or market segments to be emphasised, diminished or discontinued.

At the conclusion of this step management has a completed current situation analysis, and an outside analysis of market segments and their potential. An important point is that the segmentation scheme and the identification of market segments have come from the unique behaviour of the market or customer. It is not an internally generated definition of market and product potential. The company products and services are now objectively matched to the market segments.

At the end of this phase, data collection and organisation of the market factors is complete.

Did u know? This analysis allows the company to evaluate and select the market segments of highest potential for volume and profit contribution.

SWOT Analysis

SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis is a valuable, proven, effective tool to use in the discovery and evaluation stage of strategic planning. It is an audit of the organisation and the environment around the company. The SWOT analysis is most productive when it involves the input of a cross section of key managers in the process. Since SWOT analysis is an exercise dependent on judgment, the input from multiple sources provides an opportunity to assure all of the points of view and important issues are considered. Thinking of and using the SWOT analysis as a team sport, in contrast to an individual sport, will add value while expanding the horizon of the SWOT "thinking" exercise.

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STRENGTHS / WEAKNESSES, and OPPORTUNITIES / THREATS are a convenient, easy way to identify the relative position of your company to the market, the customer and to the competition. The SWOT analysis tool lends itself to the evaluation of the business overall as well as to specific functional areas within the business. Involving multiple people in the process expands the strategic thinking. It also improves the opportunity to gain new perspective on the relative effectiveness of the company. Bringing people into the SWOT process from both inside and outside of the company leverages the analysis even further. The views of customers upstream and suppliers downstream from the company add maximum value to a SWOT analysis.

Collecting SWOT input can be done from individuals or from groups working together. Experimenting with the process of collecting SWOT information will help to build a useful, comfortable and trustworthy process for your organisation.

Strengths are those company attributes or activities that you do better than most, or better than anyone else, in your competitive environment. Include categories important to success in your business, e.g. supply chain, marketing, operations, technology, product development, etc. Build your selection of areas based on your industry requirements for success. Think and analyse questions such as: What do we do well? What do we do better than most? Following are some examples of company strengths:

Example: **SWOT: Strengths**

- Well established reputation
- Financial resources
- Certain market segments are served profitably
- Geographic location to customers
- Geographic location to suppliers
- Management experience in the industry
- Marketing support levels
- Management information systems

Weaknesses are the attributes and activities that, if substantially improved, would provide the company additional probability for success. In this area, it is important to obtain two distinct views of the current situation. First, get multiple views from key functional managers within the company. Multiple points of view will help to assure that differing points of view are aired and all key weaknesses are surfaced. Second, get the perspective outside the company by bringing customers and suppliers into the discussion. Often weaknesses are seen differently from outside the company. The key questions are: What do we do not so well? What should be improved? Are there mistakes we need to avoid? Do others see our weaknesses as we do, or differently? Remember, it is important to be honest and realistic in your evaluation. Following are some examples of company weaknesses:

Example: **SWOT: Weaknesses**

- Lack of Expertise in Certain Growing Markets
- Lack of Clear Strategy
- High outside Sales Turnover
- Out of Touch with Marketplace

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- No marketing/advertising
- No focus on margin management
- Sales/price controls lapsed since 1997
- Lack of technological expertise
- Too much inventory
- Too many products and market segments
- Serving unprofitable markets
- Did not invest in technology
- Did not exploit product and market opportunities

Opportunities are often the product of fundamental trends or conditions developing or appearing outside of the company.

Example: Changes in specialisation, consolidation, diversification, economic conditions, lifestyles, and technology are all examples.

Seeing or recognising the development of trends or changes comes from a number of important activities that are expected of the key leaders, managers and owners of the business. Two suggested activities include reading industry and general interest publications and constantly benchmarking inside and outside your own company and industry to identify and evaluate potential opportunities. Following are examples of company opportunities:

Example: **SWOT: Opportunities**

- Growth through market segmentation
- Regional growth trends
- Inside sales optimisation through training
- Realign key management responsibilities
- New distribution model needed
- Master technology strategy

Threats are the obstacles the company faces in trying to accomplish its mission, vision and strategic goals. Threats may include items such as competitor first mover advantage on new technology or new products. Threats may come from changes in government regulation, or lender covenants. Recognition of real or perceived threats is important in the development of a strategic plan and critical to avoiding surprises that hinder goal achievement. Following are examples of threats:

Example: **SWOT: Threats**

- Distribution channel is maturing
- Consolidation and strength of competition
- Misreading trends in market segmentation
- Gas prices and consumer market changes
- Maturing/dying markets in areas of core competency

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A thorough SWOT analysis, with participation across the company and across key external relationships will provide an important building block for the strategic plan. It will be a joint exercise that yields consensus and a map for predictable performance. Along each step of the SWOT process prioritise and value each of the items. This will focus the organisation's attention and set financial parameters or values that the SWOT analysis represents.

Caution You can make SWOT a valuable, proven, effective management tool for your company by following the above few simple guidelines.

Core Competency Analysis

Core competencies are a set of unique internal skills processes and systems that provide competitive advantage in the market.

A good way to think of core competency analysis is to list the values of both product and services from the point of manufacturer or distribution to consumption. In what activities or skills does your company add value better than competitors? Are you better at research, distribution, marketing or selling? Or perhaps manufacturing? In what functional disciplines does your company add value for the customer? Core Competency Analysis provides an opportunity to insightfully look at the skills, processes and systems of the company. The benefit of the analysis to the company includes the following.

- A disciplined approach to identifying those activities that the business must undertake to compete in the market.
- A process for evaluation and prioritisation of the collective know how of the business.
- A process for identifying values and prioritising the activities of the business in a way that lends itself to making strategic decisions on the use of company resources or the need for new or additional resources.

Core Competency Analysis provides a review format useful in identifying the need for improvement in key strategic activities, practices and systems. When completed the core competency analysis separates those strategic functions best done inside the company and those that are candidates for outsourcing.

The activities kept inside are those strategic activities that the company does extremely well and, importantly, add real or perceived value to the business and give the business a competitive advantage.

The candidates for outsourced activities are those that the company does not do particularly well and add little or no value to the business. Often these activities are candidates to be conducted by strategic partners or alliances, guided by prescribed directives and managed with mid-level oversight.

Three important criteria in trying to identify Core competencies include consideration of the following questions:

- Does the activity provide unique or valued potential access to the market?
- Does the activity add value to the real or perceived perspective of customer benefits?
- Is it difficult for competition to imitate the activity?

In each company or industry there are different sets of core competencies that are important to the success of the business. In most instances the list of important competencies is relatively short. However, this short list, when well selected and developed, provides the opportunity to

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leverage the strategy of the company. Having the discipline to keep the list pared to a few highly valued competencies will increase the company's focus on the important activities and add to the value of these distinctive competencies.

While the core competencies vary by industry and by company, following is a selected list of skills, processes or systems that might be considered as core competencies:

Table 2.1: List of Core Competencies

Service Levels	Design
Efficient Systems	Product Innovation
Product Development	Marketing
Supply Chain	Speed to Market
Sales Force	Customer Service
Technology	Strategic Alliances
Manufacturing Practices	Engineering

The more unique and the better the company performance is on its own list of core competencies the more unlimited the economic value will be for the company and for the customer. The reverse is also important, that is, the more similar the company competencies are to its direct competitors the lower the economic value for the company. The more distinctiveness and uniqueness can be built into the company core competencies the more market leverage and margin performance the company can anticipate. And, in addition, more customer loyalty will also develop. Another advantage of developing a short list of distinctive, unique core competencies is that it will lead to improved access to new markets and success in new products. These benefits further leverage the well-developed competence list.

The final steps in this part of the analysis are to prioritise every activity or function; and, also to assign a dollar value or dollar cost to each activity. This step allows the company to focus on those competencies that avoid cost and bring the most value to the business. The analysis of Core Competence creates a realistic view of the skill sets, processes and systems the company is uniquely good at performing. It helps to generate focus on the value adding activities. And, finally it helps in the decision process used to determine which activities are candidates for outsourcing.

Key Success Factors

Key success factors are those functions, activities or business practices, defined by the market and as viewed by the customer that is critical to the vendor/customer relationship.

Key success factors are defined by the market and by the customer, not by the company. They revolve around skills, processes and systems. Outstanding performance in those areas results in "order winners".

Core competencies focused on the internal activities, practices and functions. When these competencies are aligned with the Key Success factors the value of the business relationship blossoms and grows for the benefit of both the company and the customer.

Another way to think of Key Success Factors is to view the business from the market and customer perspective. What functions, activities or business practices are valued and demanded by the market conditions and by the customer needs? What is it that the company must do to compete in the market and to be perceived by the customer as adding value to the business relationship? What factors are important in the customer decision process that generates an order? Why does the customer select your company over the competition?

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In considering these questions, from the market or customer's perspective, there are three variables to consider. The first variable is to consider if the function, activity or business practice has significant customer value or market differentiating qualities. If the answer is no, stop doing those activities immediately. If the answer is yes for any function, activity or business practice then attempt to quantify the value the company brings to the customer versus the value the competitors bring to the customer on the same issue. The second variable is to think and sort the issues in terms of order qualifiers. That is, the function, activity or business practice must be done to complete the business transaction; but does not particularly add value. Theses activities are, in a way, the price of admission, the activities that must be undertaken in the process of doing business and all competitors are about equal in the eyes of the customer.

The third variable is best thought of as "order winners". That is the function, activities or practices are conducted in a superior fashion compared to the competition and are highly valued by the customer. It is this third variable that sets a company apart from the competition and squarely aligns the company's total offering with the customer's total need. These are Key Success Factors.

Example: Key Success Factors might include the following:

- Strategic market segmentation
- Understand competitor's strengths and weaknesses
- Respond to customer's needs and wants
- Efficiencies through e-commerce/technology
- Reliable delivery
- Strong service
- Solid sales and support staff
- Reduces costs, operates lean
- Utilise employees strategically

In the process of analysis of Key Success Factors it is important to have a realistic view of both the drivers of the market and of the customer's needs. It is also important to understand and to define the position of the company as compared to competitors for the Key Success Factors.

Key success factors can exist in both the functional areas of the company and in the condition or circumstances of the company. Functional Key Success Factors might include such things as the following: manufacturing – proprietary processes, marketing – after sale service or highly trained sales force, supply chain – on time, perfect order delivery, Technology – on line, real time information exchange between the company and the customer.

Example: Key Success Factors relating to the condition or circumstances would be as follows: favourable market image or reputation, low cost operations (not limited to manufacturing), location relative to customer, exclusive processes in manufacturing or supply chain.

The final step in the analysis of Key Success Factors is to determine the total value of the Key Success Factors that the company brings to the customer versus the Key Success Factors that the competitors bring to the customer. Arrange the Key Success Factors in order of priority from the viewpoint of the customer and focus on those functions, activities and practices that bring the most value to the customer, and are considered most important to the customer, and are most differentiated from the competitors.

Business Unit Strategy

It is a process driven and developed around fact gathering, valuing and defining. It is developed with top down support and direction and bottom up input and analysis.

Depending on the scope and complexity of the business, the next step is to develop a strategic statement or statements for multiple elements of the business. Those elements of the business include the overall business, each operating division of the business and each key functional area of the business. So there would be an overall company business strategic statement, a division strategic statement, and functional strategic statements.

The functions might be manufacturing, marketing, logistics or supply chain, human resources or other functions important to the success of the business. The levels of strategic statements might look like the following:

- Corporate strategic statement
- Division strategic statements
- Functional strategic statements

Each one of the strategic statements must be in agreement with the overall corporate or company strategic statement and aligned with each other. The writing of an effective business unit strategic statement focuses on creativity and differentiation rather than on process. It is developed and written around the intuitive, differentiating elements of the business discovered in the first six steps of the process. The business unit strategic statement must take into account both alignment of the mission and vision statements with customer or consumer needs and differentiation compared to the competitors' strategic statement or position. The elements of uniqueness and of value adding are important to the final product of the strategic statement.

Following is a strategic statement for an automotive distributor company:

Strategy Statement

To become the "first look" two step distributor in the Ohio/Indiana market, specifically for high volume dealers and retailers. With product emphasis on brake and under hood products, customer emphasis will be on specialty performance, franchised shops, body shops, general repair shops, and automobile dealerships.

Transform the company into a value added link in the supply chain of automotive parts returning a minimum of %5 ROA through:

- Acquisition and disposition of locations
- Conversion to two-step distribution
- Value-add VMI solutions
- Focused sales and marketing strategies

The strategic statement of the Business describes what, to whom and how the business product or service is to be brought to the market. It is stated in broad, descriptive, general, non-tactical terms. It focuses on differentiating the business from the competition. It aligns the Business with its strengths and opportunities and with its customers and consumers needs. Importantly, the strategic statement differentiates the business from the competition. A well-crafted strategic statement will be brief but clear to the employees inside the company as well as externally to the suppliers and customers of the business. It will provide a description that draws boundaries and establishes clear direction to guide the managers of the business, as they make tactical and executioner plans for the day-to-day activities of the business.

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If a division or divisions' strategic statement is called for it is important to be sure those statements are totally in agreement and in sync with the business unit strategy. If conflict or contradiction exists between the strategic statements of the business and the divisions it is a clear sign of the misalignment of the core strengths, resources, skills, and goals and objectives within the organisation.

Once the business and the divisions or business unit strategies are completed, the next step is to develop functional strategies for those functions central to the operations for the businesses. Again, these functional strategies must be aligned and in agreement with the business and divisions strategies. Alignment will help to direct the functional managers to conduct activities and execute tactical plans that are consistent with the business strategy and division strategy. Alignment of all of the strategy work will help to assure efficient and effective use of the strengths, skills, and resources of the business.

Following the completion of the basic elements of developing a strategic statement for the company, divisions and functions will be the development of an annual business plan.

This work will be done from the bottom up; it will be focused on and consistent with the direction defined by the strategic planning process.

The business plan will be built around the tactical and executioner elements of conducting business. It will establish annual goals and objective important to achieving the longer term strategic plan. It will define specific goals and objectives that are measurable and meaningful. These goals and objectives will consist of both traditional financial goals such as revenue, income, cash flow, and key financial ratios. In addition it will include key sales and marketing goals such as volume, market share and market penetration or frequency of purchase or use. It will also include goals and objectives for key functional areas such as manufacturing or supply chain. The business plan will detail the tactical activities to be undertaken to achieve annual business goals.

Notes The selective mix of long term Strategic Goals and near term annual business plan Goals will become the source for selecting the few key metrics to become the "balanced scorecard".

The Balanced Scorecard

The measurement system of the business affects both the behaviour of the managers and the employees and the results they achieve for the business. What the business measures, tracts, and reports are generally what it gets for results?

In sports "score" is kept to determine who wins, who performs, what records are set and who the champion is. In business "score" is kept to report results, to effect behaviour, to reward and to recognise performance. But, it is also kept to determine progress against the long-term goals of the strategic plan and the short-term goals of the annual business plan.

Traditional financial measures alone do not adequately report results of the more complex, competitive business environment of today. So the scorecard of the past becomes the "balanced scorecard" of today. The measured results today move beyond the traditional goals of income, cash flow and financial ratios. They add process performance measurements around issues like continuous improvement, supply chain management, and customer satisfaction.

Significant improvement in these new measures will focus behaviour to "do the right things" and will result in improved traditional financial results. A balanced view and narrowly focused use of financial measures and operational measures will drive managers and employees to

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make better operational decisions. It will also encourage and direct managers to undertake tactical activities that are consistent with the goals of the strategic plan and the expectations of the stakeholders of the business.

Example: Financial goals appropriate for consideration on the balanced scorecard:

- 3% Increase in sales for the current year
- 13% Increase in sales for next three years
- Inventory reduction to $7M in the current year
- Inventory reduction to $18 million in the next three years
- Maintain current profit margins 27%
- Increase inventory turns from 1.9 to 2.6 incurrent year
- Increase inventory turns to 4.3 times within three years

The next lists are examples of non-financial goals related to metrics not directly reported on traditional financial statements. However, these metrics are related to process and execution issues that can substantially impact and influence the financial metrics.

Example: Non-financial goals might include the following:

- Non-financial goals
- Improve customer satisfaction levels to 9.8 from 9.5 (10 point scale)
- Improve on-time delivery to 99.7% from 98.5%
- Reduce obsolete inventory from 3% of sales to 1% of sales
- Reduce the number of stock keeping units by 10%
- Reduce employee turnover by 25%

Promise to Employees

To create a positive working environment where each associate can grow professionally and financially through continuous education, job stability, and competent management (measure through employee surveys).

During the process of developing a strategic plan and strategic statements for the business and for the functions we defined what is important to do and to measure. From this work we can develop the balanced scorecard elements important for the business and appropriate for driving behaviour and results.

If the scorecard measurements selected for the business are grounded in the long term strategic plan and focused on the near term annual business plan then the opportunity exists for breakthrough results. Improvements can be anticipated in both the traditional financial measures and in the process and performance measures around the issues of product, process, employee, customer, supplier and market development.

Caution The selected metrics must be a balanced mix of both financial and non-financial measures, and must be few but important to the sustainability of the business.

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Evaluation

The products of the process are both a strategic plan and an annual business plan backed up with a selective, specific scorecard to measure the progress and results.

The evaluation process needs to be on going and continuous. The evaluation process provides a clinical check-up on the progress of the business compared to both the near term business plan and the long-term strategic plan. The evaluations process provides a timeframe to determine if the hurdles set up through the scorecard are being met. In addition, the evaluation process provides a time to determine if results are still meaningful and do they add to the goals of continuous improvement for the company and add real value to the customer?

During the strategic planning process there was a constant focus on both the internal and external factors impacting the business. During the evaluation process there needs to be a continuous measurement of the circumstances both inside and outside of the company. Significant changes in conditions or in performance signal the need to consider adaptation to the near term business plan to steer the business back on the course set by the strategic plan and the scorecard. Any changes in the near term annual business plan must still conform to the parameters of the long term strategic plan.

In cases where the changes cannot be accommodated in the near term business plan then consideration for strategic plan changes is likely called for. In this case a repeat of part of all of the strategic planning process will help to get the business back on course and in a position to meet its goals and satisfy customer needs.

Remember, changes in the strategic plan are normally driven only by significant changes in the external or internal conditions identified in the strategic planning process or by some new material condition in the business environment.

In cases of significant changes it may be necessary to revamp the strategic plan and scorecard. These types of significant changes in the business environment are less common in traditional product and service companies and more common in high technology, new technology, or rapidly changing market conditional situations. The process of evaluation of the strategic plan needs to be ongoing. It calls for attention and sensitivity to the environment inside and outside of the company. It is the responsibility of both the senior management and middle management to keep tuned into conditions and to sound the signal when significant occurrences are identified or anticipated.

The evaluation process is best conducted with both a formal and informal component. The formal component may be a quarterly, or other timely period, evaluation of conditions. The informal process is the discipline of the managers to practices of being in the field, visiting customers, and suppliers. It is a continuous process of benchmarking both inside the company and outside of the company and its industry, including companies and industries not in a directly competitive set; and it is being sensitive to changing conditions within the company.

The on-going evaluation process is the early warning system for the company. A well established formal and informal process and practice in this area can be of significant value to the company. It keeps the near term business plan on tract and the long term strategic plan vital and effective in steering the company through constant environmental change while delivering consistent and predictable results.

The final decision that comes out of the evaluation process is to determine the extent to which the strategic plan and scorecard needs adjustment to continue to be effective as a working tool keeping the company on course. The final test is to determine if the company is meeting the expected results for the owners, employees and most importantly, the customers.

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Did u know? Minor or insignificant changes in the marketplace can usually be addressed by changes in the near term business plan.

2.2.2 Components of an IT Strategic Plan

The planning process includes three distinct phases:

- Pre-planning and discovery
- Planning workshops
- Plan development and presentation

The pre-planning and discovery phase assists organisations in the identification of business priorities, key initiatives and goals, the mapping of critical business processes and supporting technology systems, the collection of IT departmental performance metrics, an assessment of the organisation's current IT infrastructure, and a review of any existing IT strategic plans.

The planning workshop provides workbooks and templates for each participant, the use of group decision making technology, and the facilitation by a seasoned professional. The facilitator guides the participants through the planning process and documents all of the proceedings.

The plan development and presentation produces a final IT strategic plan for the organisation and develops a formal presentation and review for all the stakeholders. The final report also includes any specific observations or recommendations from the planning facilitator. This allows for stakeholder buy-in of the organisational IT strategic plan.

Task Make distinction between pre-planning & discovery and plan development & presentation.

2.2.3 Strategic Planning Process Problems

While the strategic planning process explained above is relied upon by numerous organisations, it is just one strategic management approach, and it is most successful when used within stable corporate environments. A major downside of this top-down approach is that it can be cumbersome within a quickly changing competitive environment. When change is in the air, successful strategies frequently develop within lower levels of the organisation where employees and managers are closer to day-to-day operations and customer interaction. This strategic planning model also makes the assumption that relatively accurate forecasting is available.

Notes Unfortunately, when a business environment is uncertain, long-term forecasts cannot be relied upon. In these situations, companies often use scenario planning instead as a way to deal with several possible outcomes.

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Self Assessment

Fill in the blanks:

6. The ..... statement describes who we are and what we do as a company.
7. The ..... statement is the owner's view of where the enterprise should be in the future.
8. The purpose of ..... is to match the company's current or prospective products and services with the market's potential.
9. ..... analysis is a valuable, proven, effective tool to use in the discovery and evaluation stage of strategic planning.
10. ..... analysis provides an opportunity to insightfully look at the skills, processes and systems of the company.
11. ..... are those functions, activities or business practices, defined by the market and as viewed by the customer.
12. The ..... statement of the business describes what, to whom and how the business product or service is to be brought to the market.
13. The ..... process provides a timeframe to determine if the hurdles set up through the scorecard are being met.
14. The ..... phase assists organisations in the identification of business priorities, key initiatives and goals, etc.
15. The ..... provides workbooks and templates for each participant, the use of group decision making technology, and the facilitation by a seasoned professional.

Case Study

Cisco's Internet Scenarios to 2025

Cisco and Monitor Global Business Network set out to develop scenarios that answered important questions about the future of the Internet.

- What will the Internet be like in 2025?
- How much bigger will the Internet have grown from today's 2 billion users and $3 trillion market?
- Will the Internet have achieved its full potential to connect the world's entire population in ways that advance global prosperity, business productivity, education, and social interaction?

In Cisco's Internet scenarios report, titled "The Evolving Internet: Driving Forces, Uncertainties, and Four Scenarios to 2025," it identified the following drivers and scenarios:

- ***Key Drivers:*** Cisco's three driving forces are (1) size and scope of broadband network build out, (2) incremental or breakthrough technological progress, and (3) unbridled or constrained demand from Internet users.
- ***Scenario 1 Fluid Frontiers:*** This scenario predicts a world in which the Internet becomes pervasive and centrifugal. Technology continues to make connectivity and

Contd....

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devices more and more affordable (in spite of limited investment in network build-out) while global entrepreneurship — and fierce competition — ensure that the wide range of needs and demands from across the world are met quickly and from equally diverse setups and locations.

- ***Scenario 2 Insecure Growth:*** In this scenario, users — individuals and business alike — are inhibited from intensive reliance on the Internet. Relentless cyber attacks driven by wide-ranging motivations defy the preventive capabilities of governments and international bodies.
- ***Scenario 3 Short of the Promise:*** This scenario consists of a frugal world in which prolonged economic stagnation in many countries takes its toll on the spread of the Internet. Technology offers no compensating breakthroughs, and protectionist policy responses to economic weakness make matters worse — both in economic terms and with regard to network technology adoption.
- ***Scenario 4 Bursting at the Seams:*** In this scenario, the Internet becomes a victim of its own success. Demand for IP-based services is boundless, but capacity constraints and occasional bottlenecks create a gap between the expectations and reality of Internet use. Meanwhile, international technology standards don't come to pass, in part because of a global backlash against decades of U.S. technology dominance.

Question

Chalk out various implications and potential strategies from these scenarios.

Source: http://www.dummies.com/how-to/content/strategic-planning-case-study-ciscos-internet-scen.html

2.3 Summary

- Strategic planning determines where an organisation is going over the next year or more, how it's going to get there and how it'll know if it got there or not.
- Strategic planning is a collaborative process involving organisational stakeholders and technology professionals in sessions designed to better understand the future direction of the organisation and how technology can enable the organisation to be successful.
- A strategic plan must reflect the thoughts, feelings, ideas, and wants of the developers and mould them along with the organisation's purpose, mission, and regulations into an integrated document.
- Strategic planning is extensively needed in the functioning of an IT company or any other organisation because it helps managers identify desired outcomes and formulate feasible plans to achieve their objectives by using available resources and capabilities.
- The strategic planning process is one that has been used in some form for as long as companies have been in business.
- The strategic planning process starts with the company's mission to set goals or objectives. With goals in mind, a situation analysis can then be conducted so a strategy can be formulated and ultimately implemented.
- The steps in strategic planning process include: current situation analysis, segmentation analysis, strength, weakness, opportunities, and threat analysis, core competencies analysis, Key Success Factors, business unit strategy/business plan, balanced score card, evaluation.
- While the strategic planning process is relied upon by numerous organisations, it is just one strategic management approach, and it is most successful when used within stable corporate environments.

Notes

2.4 Keywords

Core Competency Analysis: Core Competency Analysis provides a review format useful in identifying the need for improvement in key strategic activities, practices and systems.

Evaluation: The evaluation process provides a clinical check-up on the progress of the business compared to both the near term business plan and the long-term strategic plan.

Market Segments: Market segments are groups of customers who exhibit similar buying decision processes.

Mission Statement: The mission statement describes who we are and what we do as a company.

Planning workshop: The planning workshop provides workbooks and templates for each participant, the use of group decision making technology, and the facilitation by a seasoned professional.

Strategic planning: Strategic planning is a tool for organising the present on the basis of the projections of the desired future.

SWOT: SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis is a valuable, proven, effective tool to use in the discovery and evaluation stage of strategic planning.

Vision Statement: The vision statement is the owner's view of where the enterprise should be in the future.

2.5 Review Questions

1. What is strategic planning? Explain with examples.
2. Describe the relationship of strategic planning with IT. Give examples.
3. Elucidate the concept of strategic planning process with example.
4. List the steps included in strategic planning process.
5. What are the components of an IT strategic plan? Discuss.
6. Discuss the problems faced during strategic planning process.
7. Make distinction between current situation analysis and segmentation analysis.
8. Core Competency Analysis provides an opportunity to insightfully look at the skills, processes and systems of the company. Comment.
9. Explain the concept of Key Success Factors with examples.
10. Describe the use of balanced scorecard with examples.

Answers: Self Assessment

1.	Strategic planning	2.	Business
3.	Issues-based	4.	Goals-based
5.	technology	6.	mission
7.	vision	8.	segmentation analysis
9.	SWOT	10.	Core Competency
11.	Key Success Factors	12.	strategic

13. evaluation
14. pre-planning and discovery
15. planning workshop

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2.6 Further Readings

Books

George A. Steiner (1997), *strategic planning*, Simon and Schuster.

Henry Mintzberg (1994), *Rise and Fall of strategic planning*, Simon and Schuster.

John Ward, Joe Peppard (2007), *strategic planning for Information Systems*, John Wiley & Sons.

Stanley C. Abraham (2012), *strategic planning: A Practical Guide for Competitive Success*, Emerald Group Publishing,

Online links

http://www.quickmba.com/strategy/strategic-planning/

http://managementhelp.org/strategicplanning/index.htm

http://www.balancedscorecard.org/BSCResources/StrategicPlanningBasics/tabid/459/Default.aspx

http://siteresources.worldbank.org/INTAFRREGTOPTEIA/Resources/mosaica_10_steps.pdf

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Unit 3: Project Management

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Objectives

After studying this unit, you should be able to:

- Discuss the need of understanding project management
- Describe the concept of project and project management
- Discuss various project variables
- State various project characterisations
- Explain the concept of project management knowledge areas

Introduction

Project management is the process of applying knowledge, skills, tools and techniques to activities within a project. It is a methodical approach to planning and guiding project processes from start to finish. Many of the techniques a project manager uses, as well as the knowledge and experience required to do the work, are similar to those used in managing organisational units. Frequently, a project manager acts independently of the formal, functional organisation. Project management encompasses the components necessary for the completion of a project. A *project manager* gathers and organises the resources required to initiate and moderate each stage of a project, from beginning to end. A *project* is a specific one-time endeavour that has a finish date. This is not to be confused with business operations that occur on a regular basis. A project is a set of temporary, non-routine activities, the completion of which requires combined effort and skills from people with a variety of specialisations. In this unit, we will discuss the concept of project management, project variables, and project management knowledge areas.

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3.1 Need of Understanding Project Management

Project management is the defining factor of an organisation's success. It is a meter that gauges the potential risks and finds the solutions to overcome them. Project management is essentially a plan that forms the firm footing for an organisation to climb the ladder of success. Every organisation has to chalk out its own plan to accomplish its predetermined goals and objectives. There isn't a one-size-fits-all plan that can be blindly followed. It is the difference in planning and execution of project management that yields the desired results.

Leading organisations across sectors and geographic borders have been steadily embracing project management as a way to control spending and improve project results. When the recession began, this practice became even more important. Executives discovered that adhering to project management methods and strategies reduced risks, cut costs and improved success rates—all vital to surviving the economic crisis.

Project Management is important to understand as it provides the following benefits:

- ***Cost-Effectiveness:*** Project management provides a roadmap for the journey of success. It is the greatest resource that allows the manager to understand the available resources and the methods to use them with the demands. Thus, with a plan in hand, it is easy to utilise the resources in the optimum possible way. Project management, prior to launching a project, identifies the irrelevant costs, reduces wastage of resources and thus ensures cost-effectiveness in the longer run.
- ***Better Productivity:*** Trustworthy quality of products is a way of retaining the existing clientele and adding to the same. Project management keeps the quality of products in constant check, thus ensuring better productivity in terms of quality and quantity. This not only helps the company in earning goodwill for a lifetime, but also promises customer satisfaction. Several project management plans use tools such as six sigma which improve their processes and eliminate the defects; this leads to enhancement in their productivity.
- ***Minimisation of Risks:*** Every business is faced with risks of loses due to various reasons. However, with a strategy in place, gauging the risks is easier and making diversions from the same is easier as well. This maintains stable work in progress. By planning and analysing, a project manager can mitigate risks and be a part of fair business competition. Project management helps in identification of loopholes and potential threats. Once these are singled out, the management can then take decisions to change strategies to erase risks that can negatively affect the productivity and business interests at large.
- ***Accomplishing Predetermined Goals:*** Every organisation sketches its goals and objectives, which is the basis of earning profits and making a way towards growth. Project management is the key tool for achieving predetermined targets in a structured way. It decides the strategies that will be used to reach the goal in the fastest way. It is a structured way of getting to your objectives.

Project management goes through fives stages which are; initiation, planning and design, executing, monitoring and controlling, closing and project control systems. After the allocation of the task, the project manager is responsible for drawing out a project management plan in the aforementioned order. He must also hire a team for delegation of work and to supervise the work thereafter.

Project management is a branch of management which uses various management tools such as budgeting, allocating and optimisation to fulfil a defined goal for a shorter period of time. The importance of project management in organisations is seen through quality of products, customer satisfaction, employee satisfaction, efficiency in business, mitigation of risks involved and a successful business in totality. The positive nature of all these factors of an organisation explains why project management is important. Management of any kind always helps in painting a

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clear picture of what is available, what is required and what is the way to get there, and a true leader will always know it. As Stephen Covey rightly said, "Management is efficiency in climbing the ladder of success; leadership determines whether the ladder is leaning against the right wall or not."

Notes It is customary for project managers to claim that good project management will reduce project slippages, provide better project results, save money, and usher in a whole new era of golden tranquillity.

Now we will discuss in detail the concept of project, project management, project variables, and project management knowledge areas.

Self Assessment

Fill in the blanks:

1. ..... is a branch of management which uses various management tools such as budgeting, allocating and optimisation to fulfil a defined goal for a shorter period of time.
2. After the allocation of the task, the ..... is responsible for drawing out a project management plan in the aforementioned order.

3.2 Project

Organisations perform work. Work generally could be classified into either operations or projects, although in some cases both of them may overlap. Both operations and projects share many characteristics in common like:

- People perform both the activities.
- Both are constrained by limited resources.
- Both are planned, executed and controlled.

However operations and projects differ primarily in its repeatability. Operations are ongoing and repetitive whereas projects are temporary and unique. A project is thus defined in terms of its distinctive characteristics—a project is a temporary endeavour undertaken to create a unique product or service. Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguishing way from all other products or services. For many organisations, projects are a means to respond to requests that cannot be addressed within the organisation's normal operational limits.

Projects are undertaken at all levels of the organisation. They may involve a single person or many thousands. Their duration ranges from a few weeks to a few years. Projects may involve a single unit of one organisation or may cross-organisational boundaries.

Example: Project examples could include:

- Developing a new product or service.
- Effecting a change in structure, staffing, or style of an organisation.
- Developing a new or modified information system.
- Implementing a new business procedure or process.

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Like any project, an IT project is a temporary endeavour (with a start date and an end date) to bring about a specific finalised goal.

Example: Several examples of IT projects include:

- Programming computer software, a mobile app, or video game
- Designing hardware architecture for a computer platform
- Web development for an online shopping site
- Data security on a social network or bank server

Today, because information technology is such a fast-growing industry, even projects that are not exactly defined as "IT" (such as those in the construction or services industries) are not entirely separate from IT. For instance, a concert is not an IT project, but the featured band might advertise the event by creating a new website.

Did u know? As projects are often implemented as a means of achieving an organisation's strategic plan, they are critical for the organisations growth.

3.2.1 Project Variables

Project Management tries to gain control over the following variables:

- ***Time:*** The amount of time required to complete the project. Typically it is broken down for analytical purposes into the time required to complete the components of the project. This is then further broken down into the time required to complete each task contributing to the completion of each component. Typically the thing over which technical people have the least control (anecdotally it seems as though the go-live date for software is defined more by sales and marketing than by need), but you can decide to deliver later to get what you want.
- ***Cost:*** Calculated from the time variable. Cost to develop an internal project is time multiplied by the cost of the team members involved. When hiring an independent consultant for a project, cost will typically be determined by the consultant or firm's hourly rate multiplied by an estimated time to complete.
- ***Quality:*** The amount of time put into individual tasks determines the overall quality of the project. Some tasks may require a given amount of time to complete adequately, but given more time could be completed exceptionally. Over the course of a large project, quality can have a significant impact on time and cost (or vice versa).
- ***Scope:*** Requirements specified for the end result. The overall definition of what the project is supposed to accomplish, and a specific description of what the end result should be or accomplish. In simple terms, if you deliver less functionality, it will take you less time. The problem is that often the decision as to what not to deliver happens during the development process itself. This means that prioritisation of functionality from the outset is important. If half way through, you require to cut scope, but the only stuff you have left is the stuff your users simply must have, and you spent the last three months delivering things they'd only like to have, your options are limited. Priorities can change, but core functionality tends not too – concentrate on delivering that and you'll make it easier for yourself in the long run.
- ***Risk:*** Potential points of failure. Most risks or potential failures can be overcome or resolved, given enough time and resources. Making sure you have situations in which potential risks can be raised is important (a daily stand-up might be one). Periodically risks should be assessed, in terms of how likely they are to occur, and also in terms of how much damage they can create.

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Some risks can be mitigated, some eliminated entirely, and others cannot be addressed by you. In any case once prioritised in terms of likelihood and potential damage, they can be mitigated or communicated to your business sponsor accordingly.

- ***People:*** Adding more people to a project can make it faster to a point. However in software adding people very rarely tends to result in a linear increase in productivity. Hiring the right people can be more efficient, but is far from easy.

  Some organisations take the 'lots of dumb people being told what to do by one or two smart people' route, others the 'a few smart people all knowing what to do'.

  Example: In the consultancy world, an organisation with a lower charge rate but lots of people ends up costing much more deliver than a small number of people with higher charge rates.

- ***Process:*** Reworking one's process in order to be more efficient is an obvious thing to do, but hard to achieve. Depending on the flexibility of your organisation changing your process might not be easy, even if you know what it is to change.

  Example: In order to deliver faster, changes mid-project tend to be limited and small changes.

  Retrospectives can be a good tool for identifying what the team thinks is required, but don't discount seeking outside help – someone from another team might have a different take on things.

A far more common type of process change occurs when people make what is often claimed to be short-term sacrifices in terms of software quality to deliver on time. Changes could involve writing less developer tests, spending less time performing manual tests, stop pairing, or spend less time ensuring consistent technical vision. When these changes really are short-term, and time is set aside afterwards to repair the damage done, this may be a viable technique. However those organisations which tend to drop quality in order to deliver faster tend to use this technique more than any other, and frequently never spend time playing catch up – leading to a team spending most of their time running from one disaster to another.

To keep control over the project from the beginning of the project all the way to its natural conclusion, a project manager uses a number of techniques: project planning, earned value, risk management, scheduling and process improvement.

3.2.2 Project Characterisations

In this section, different project phases and project life cycle are discussed.

Project Phases

Each project phase is marked by completion of one or more deliverables. A deliverable is a tangible, verifiable work product such as a feasibility study, a detail design, or a working prototype. The deliverables, and hence the phases, are part of a generally sequential logic designed to ensure proper definition of the product of the project. The conclusion of a project phase is generally marked by a review of both key deliverables and project performance to date, to (a) determine if the project should continue into its next phase and (b) detect and correct errors cost effectively. These phase-end reviews are often called phase exits, stage gates, or kill points.

Each project phase normally includes a set of defined deliverables designed to establish the desired level of management control. The majority of these items are related to the primary

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phase deliverable, and the phases typically take their names from these items: requirements, design, build, test, start-up, turnover, and others, as appropriate.

Project Life Cycle

The project life cycle serves to define the beginning and the end of a project. The project life-cycle definition will determine whether the feasibility study is treated as the first project phase or as a separate, standalone project.

Example: When an organisation identifies an opportunity to which it would like to respond, it will often authorise a needs assessment and/or a feasibility study to decide if it should undertake the project.

The project life-cycle definition will also determine which transitional actions at the beginning and the end of the project are included and which are not. In this manner, the project life-cycle definition can be used to link the project to the ongoing operations of the performing organisation.

The phase sequence defined by most project life cycles generally involves some form of technology transfer or handoff such as requirements to design, construction to operations, or design to manufacturing. Deliverables from the preceding phase are usually approved before work starts on the next phase. However, a subsequent phase is sometimes begun prior to approval of the previous phase deliverables when the risks involved are deemed acceptable. This practice of overlapping phases is often called fast tracking.

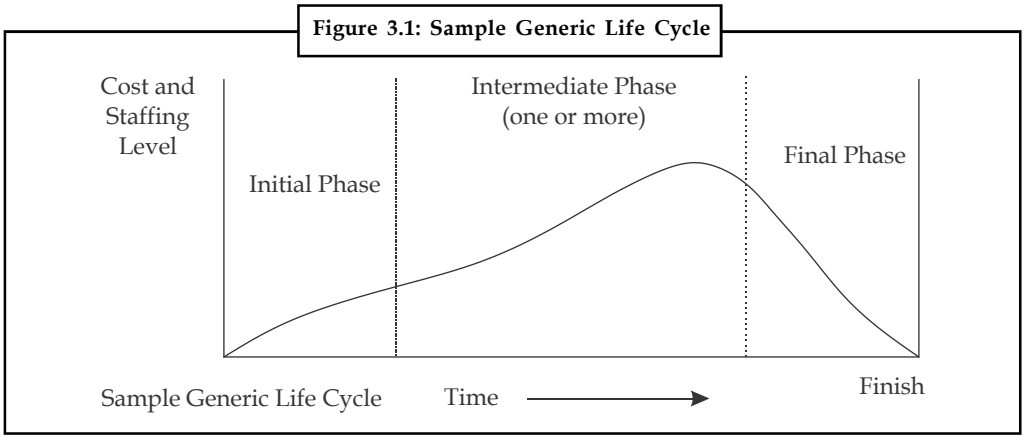
Project life cycles generally define:

- What technical work should be done in each phase (e.g. is the work of the analyst part of the definition phase or part of the execution phase)?
- Who should be involved in each phase (e.g. resources that need to be involved with requirements and design)? Project life-cycle descriptions may be very general or very detailed. Highly detailed descriptions may have numerous forms, charts, and checklists to provide structure and consistency. Such detailed approaches are often called project management methodologies.

Most project life-cycle descriptions share a number of common characteristics:

- Cost and staffing levels are low at the start, higher toward the end, and drop rapidly as the project draws to a conclusion. This pattern is illustrated in the figure below:

Figure 3.1: Sample Generic Life Cycle



Source: http://www.giorgiogiussani.it/project-managemet_EN.pdf

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- The probability of successfully completing the project is lowest, and hence risk and uncertainty are highest, at the start of the project. The probability of successful completion generally gets progressively higher as the project continues.
- The ability of the stakeholders to influence the final characteristics of the project's product and the final cost of the project is highest at the start and gets progressively lower as the project continues. A major contributor to this phenomenon is that the cost of changes and error correction generally increases as the project continues.

Caution Care should be taken to distinguish the project life cycle from the product life cycle.

Task Explain the concept of fast tracking in project life cycle.

Self Assessment

Fill in the blanks:

3. A ..... is a temporary endeavour undertaken to create a unique product or service.
4. The amount of time put into individual tasks determines the overall ..... of the project.
5. Each project phase normally includes a set of defined ..... designed to establish the desired level of management control.
6. The ..... serves to define the beginning and the end of a project.
7. Depending on the flexibility of your organisation, changing your process might not be easy, even if you know what it is to .....

3.3 Concept of Project Management

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements.

IT project management is an area of project management that has an emphasis on computer technology. This form of project management differs from other management systems in the way that it deals specifically with how information is handled via both software and hardware.

IT project management is the knowledge base in which IT project managers refer to in order to successfully carry out their projects. IT project management consists of the various methodologies and tools that assist in the planning, moderation, and execution of an IT project. The project manager is in charge of gathering, organising, and directing the resources necessary to provide a project with the most efficient result. Because IT projects rely heavily on data management, one of the best things an IT project manager can do to increase his or her productivity is utilise the most up-to-date IT project management software solutions.

Project management is accomplished through the use of the following five processes:

- Initiation
- Planning

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- Execution
- Controlling and
- Closure

The project team manages the various activities of the project, and the activities typically involve:

- Competing demands for: scope, time, cost, risk and quality.
- Managing expectations of stakeholders.
- Identifying requirements.

Notes It is important to note that many of the processes within project management are iterative in nature. This is partly due to the existence of and the necessity for progressive elaboration in a project throughout the project life cycle; i.e. the more you know about your project, the better you are able to manage it.

Did u know? The term "project management" is sometimes used to describe an organisational approach to the management of ongoing operations. This approach treats many aspects of ongoing operations as projects to apply project management techniques to them.

Caselet

Getting Things Done

All of us have heard, some have read, the famous best seller on *Execution: The discipline of getting things done* by Larry Bossidy and Ram Charan. Execution translates visions of the organisations in to reality. In the software industry, it often translates to effective project management. The topic assumes more relevance today especially for software firms that are at "tipping point" in their growth stories.

The Project Manager (PM) and the development team today deal with many pressures – senior management, marketing, finance, customers, and users – during the software development process. These pressures impact the cost and the quality of the software produced. There are generally more than one or two reasons for a software project to fail, and it usually is a combination of technical, project management and business decisions.

Opting to Outsource

Project life cycles have become shorter, thanks to rapid evolution of technologies and markets. This has resulted in short-term contract agreements, with customers expecting the firm to ramp up in capabilities in short time to meet their needs. The clients demand more value for the outsourced work as cost arbitrage of the Indian firms continue to be eroded and are looking "to squeeze every dollar spent". Hence, there's an increasing need to manage projects effectively and efficiently – leaving no slack on cost, quality and schedule.

Software outsourcing projects are of two types: fixed price (FP) contracts and Time & Material (T&M) contracts. In FP contracts the software firm gets a fixed price and pays for all realised costs. This keeps the software firm interested in managing the projects effectively, with available resources at minimal costs to meet schedules.

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In T&M contracts, though the client pays for all realised costs, the onus of finding resources (mainly competent engineers) for the projects rest with the firm.

This poses a challenge in executing effective staff management in a highly attrition-afflicted industry. All these factors compel companies to increasingly focus on the following project management capabilities.

Meticulous Methods

First, define and defend the boundaries of the project well with the client. Effective requirements, scope management, defining exact deliverables and committing to all these become important. Research has often showed that badly defined requirements are one of the main reasons why software projects fail. These can be better managed by shortening the cycles for delivery and periodically delivering smaller work products that allows clients to provide timely feedback. Methods such as agile project management are tailored for this context. These methods reduce risks for both the client and the firm.

Second, have robust methodologies and frequent cross-checks to ensure that effort estimates are appropriate, especially in FP projects. While optimistic, underestimates often lead to unmanageable projects, pessimistic overestimates end up as a losing proposition. Hence, there is a need for reliable statistics.

Third, focus continually on people's productivity and skills. This becomes a challenge as firms tend to increase the bottom of the "pyramid model" of resourcing to reduce costs. Project managers often have to deal with partially trained freshers, mentor and motivate them and promote them to get them to the level of co-owners of the project. Apart from technical capability building, this also requires the firms to invest in project management capabilities. The likes of Project Management Institute (PMI) have developed exhaustive framework for accessing and developing project management capabilities. But the unique nature of the software industry requires a comprehensive project management training programme that focuses on experiential learning through internal case studies and sessions conducted by in-house experts. Since each firm is unique with respect to its organisational climate and the types of projects they handle, best practices need to be tailored to become effective in the organisational context with greater emphasis on practices that has worked well in the organisation.

Risk Planning

The need for appropriate risk planning and management, as technologies and business environment continues to evolve, cannot be emphasised enough. If identified risks are not reassessed and controlled, there is no insight to the problems within the project. These problems could entail inadequate engineering resources or delayed third party components, situations that can result in unpleasant surprises for the project managers.

CXOs looking for levers to pull the organisation to the next levels of performance while meeting higher customer expectations need look no further – the one labelled "Project Management" is the one to try first.

Source: http://www.thehindubusinessline.com/features/eworld/article2465175.ece

3.3.1 Project Management Processes

To help understanding the integrative nature of project management, and to emphasise the importance of integration, project management has been defined in terms of the various component processes and their interactions. This section provides an introduction to the concept of project management as a number of interlinked processes. Projects are composed of processes.

Notes

A process is "a series of actions bringing about a result". Project processes are performed by people and generally fall into one of two major categories:

- Project management processes describe, organise, and complete the work of the project.
- Product-oriented processes specify and create the project's product. Product oriented processes are typically defined by the project life and vary by application area.

Project management processes and product-oriented processes overlap and interact throughout the project.

Example: The scope of the project cannot be defined in the absence of some basic understanding of how to create the product.

3.3.2 Process Interactions

Within each process group, the individual processes are linked by their inputs and outputs. By focusing on these links, we can describe each process in terms of it's:

- ***Inputs*** – documents or documentable items that will be acted upon.
- ***Tools and techniques*** – mechanisms applied to the inputs to create the outputs.
- ***Outputs*** – documents or documentable items that are a result of the process.

The project management processes common to most projects in most application areas are described here. The process interactions illustrated here are also typical of most projects in most application areas.

3.3.3 Process Groups

Project management processes can be organised into five groups of one or more processes each:

- ***Initiating processes*** — authorising the project or phase.
- ***Planning processes*** — defining and refining objectives and selecting the best of the alternative courses of action to attain the objectives that the project was undertaken to address.
- ***Executing processes*** — coordinating people and other resources to carry out the plan.
- ***Controlling processes*** — ensuring that monitoring and measuring progress regularly to identify variances from plan so that corrective action can be taken when necessary meet project objectives.
- ***Closing processes*** — formalising acceptance of the project or phase and bringing it to an orderly end.

These are elaborated below:

Initiating Processes

Authorising the project or phase is part of project scope management.

Planning Processes

Planning is of major importance to a project because the project involves doing something that has not been done before. As a result, there are relatively more processes in this section. However, the number of processes does not mean that project management is primarily planning—the amount of planning performed should be commensurate with the scope of the project and the usefulness of the information developed. Planning is an ongoing effort throughout the life of the project.

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- ***Core Processes:*** Some planning processes have clear dependencies that require them to be performed in essentially the same order on most projects.

  Example: Activities must be defined before they can be scheduled or costed.

  These core planning processes may be iterated several times during any one phase of a project.

  They include:

  - *Scope Planning* – developing a written scope statement as the basis for future project decisions.
  - *Scope Definition* – subdividing the major project deliverables into smaller, more manageable components.
  - *Activity Definition* – identifying the specific activities that must be performed to produce the various project deliverables.
  - *Activity Sequencing* – identifying and documenting interactivity dependencies.
  - *Activity Duration Estimating* – estimating the number of work periods that will be needed to complete individual activities.
  - *Schedule Development* – analysing activity sequences, activity durations, and resource requirements to create the project schedule.
  - *Risk Management Planning* – deciding how to approach and plan for risk management in a project.
  - *Resource Planning* – determining what resources (people, equipment, materials) and what quantities of each should be used to perform project activities.
  - *Cost Estimating* – developing an approximation (estimate) of the costs of the resources required to complete project activities.
  - *Cost Budgeting* – allocating the overall cost estimate to individual work activities.
  - *Project Plan Development* – taking the results of other planning processes and putting them into a consistent, coherent document.

- ***Facilitating Processes:*** Interactions among the other planning processes are more dependent on the nature of the project.

  Example: On some projects, there may be little or no identifiable risk until after most of the planning has been done and the team recognises that the cost and schedule targets are extremely aggressive and thus involve considerable risk.

  Although these facilitating processes are performed intermittently and as needed during project planning, they are not optional.

  They include:

  - *Quality Planning* – identifying which quality standards are relevant to the project and determining how to satisfy them.
  - *Organisational Planning* – identifying, documenting, and assigning project roles, responsibilities, and reporting relationships.
  - *Staff Acquisition* – getting the human resources needed assigned to and working on the project.

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- *Communications Planning* – determining the information and communications needs of the stakeholders: who needs what information, when will they need it, and how will it be given to them.
- *Risk Identification* – determining which risks might affect the project and documenting their characteristics.
- *Qualitative Risk Analysis* – performing a qualitative analysis of risks and conditions to prioritise their effects on project objectives.
- *Quantitative Risk Analysis* – measuring the probability and impact of risks and estimating their implications for project objectives.
- *Risk Response Planning* – developing procedures and techniques to enhance opportunities and to reduce threats to the project's objectives from risk.
- *Procurement Planning* – determining what to procure, how much to procure, and when.
- *Solicitation Planning* – documenting product requirements and identifying potential sources.

Executing Processes

The executing processes include core processes and facilitating processes.

- ***Project Plan Execution*** – carrying out the project plan by performing the activities included therein.
- ***Quality Assurance*** – evaluating overall project performance on a regular basis to provide confidence that the project will satisfy the relevant quality standards.
- ***Team Development*** - developing individual and group competencies to enhance project performance.
- ***Information Distribution*** – making needed information available to project stakeholders in a timely manner.
- ***Solicitation*** – obtaining quotations, bids, offers, or proposals as appropriate.
- ***Source Selection*** – choosing from among potential sellers.
- ***Contract Administration*** – managing the relationship with the seller.

Controlling Processes

Project performance must be monitored and measured regularly to identify variances from the plan. Variances are fed into the control processes in the various knowledge areas. Adjustments are made to the plan to the extent of the variances observed (i.e. those that jeopardise the project objectives).

Example: A missed activity finish date may require adjustments to the current staffing plan, reliance on overtime, or tradeoffs between budget and schedule objectives.

Controlling also includes taking preventive action in anticipation of possible problems. The controlling process group contains core processes and facilitating processes.

The various interactions between core and facilitating processes are:

- ***Integrated Change Control*** – coordinating changes across the entire project.
- ***Scope Verification*** – formalising acceptance of the project scope.
- ***Scope Change Control*** – controlling changes to project scope.

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- ***Schedule Control*** – controlling changes to the project schedule.
- ***Cost Control*** – controlling changes to the project budget.
- ***Quality Control*** – monitoring specific project results to determine if they comply with relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance.
- ***Performance Reporting*** – collecting and disseminating performance information. This includes status reporting, progress measurement, and forecasting.
- ***Risk Monitoring and Control*** – keeping track of identified risks, monitoring residual risks and identifying new risks, ensuring the execution of risk plans, and evaluating their effectiveness in reducing risk.

Closing Processes

The following components make the closing process.

- ***Contract Closeout*** – completion and settlement of the contract, including resolution of any open items.
- ***Administrative Closure*** – generating, gathering, and disseminating information to formalise phase or project completion, including evaluating the project and compiling lessons learned for use in planning future projects or phases.

Task Make distinction between initiating processes and planning processes.

Self Assessment

Fill in the blanks:

8. IT project management is an area of project management that has an emphasis on ..... technology.
9. Project management processes and ..... processes overlap and interact throughout the project.
10. ..... processes formalises acceptance of the project or phase and brings it to an orderly end.
11. ..... measures the probability and impact of risks and estimates their implications for project objectives.
12. ..... refers to the documents or documentable items that are a result of the process.

3.4 Project Management Knowledge Areas

Project management knowledge areas include all the aspects of the project management that are required for the successful completion of a project on time with the best output. The project management knowledge areas are defined in the Project Management Body of Knowledge (PMBOK), which is a collection of all the process, procedures and knowledge areas that has been accepted as the best and the most effective practices for project management.

As an internationally recognised standard (IEEE Std 1490-2003) has provided the fundamentals of a project management applicable for all the types of projects whether it be construction, software, engineering, automotive it provides the fundamentals of project management, irrespective of the type of project be it construction, software, engineering or automotive.

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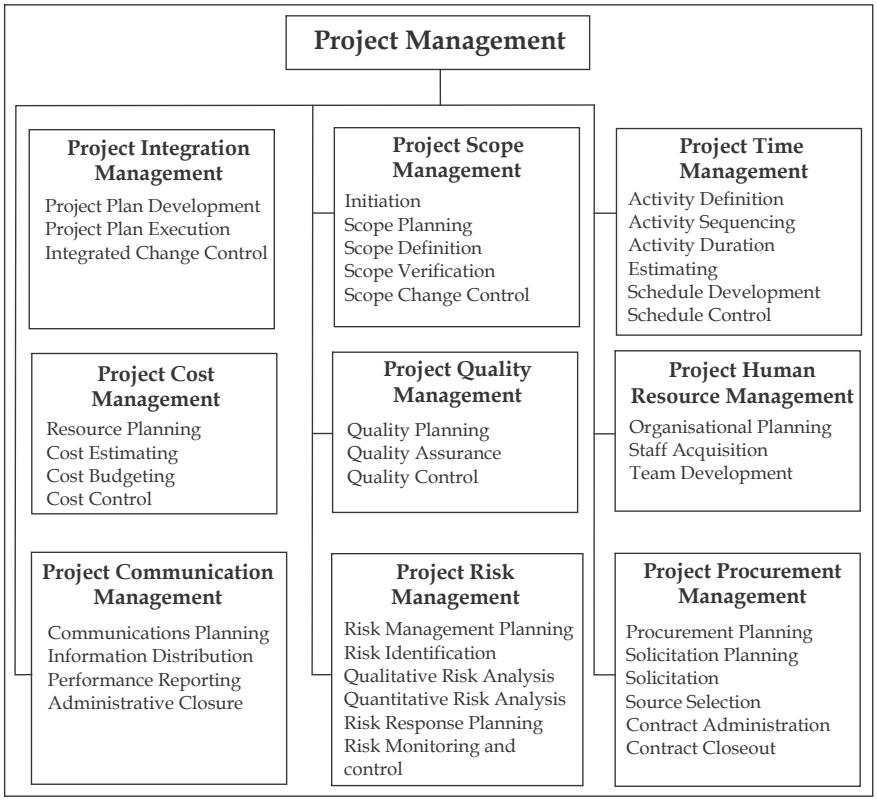
The Project Management Knowledge Areas describes project management knowledge and practice in terms of the various component processes. These processes have been organised into nine knowledge areas, as described below and as illustrated in figure below.

Figure 3.2: Project Management Knowledge Areas



Source: http://www.giorgiogiussani.it/project-managemet_EN.pdf

1. ***Project Integration Management:*** Project integration management describes the processes required to ensure that the various elements of the project are properly coordinated. It consists of project plan development, project plan execution, and integrated change control.
2. ***Project Scope Management:*** Project scope management describes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. It consists of initiation, scope planning, scope definition, scope verification and scope change control.
3. ***Project Time Management:*** Project time management describes the processes required to ensure timely completion of the project. It consists of activity definition, activity sequencing, activity duration estimating, schedule development and schedule control.
4. ***Project Cost Management:*** Project cost management describes the processes required to ensure that the project is completed within the approved budget. It consists of resource planning, cost estimating, cost budgeting, and cost control.
5. ***Project Quality Management:*** Project quality management describes the processes required to ensure that the project will satisfy the needs for which it was undertaken. It consists of quality planning, quality assurance and quality control.
6. ***Project Human Resource Management:*** Project human resource Management describes the processes required to make the most effective use of the people involved with the project. It consists of organisational planning, staff acquisition and team development.

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7. ***Project Communications Management:*** Project communications management describes the processes required to ensure timely and appropriate generation, collection, dissemination, storage and ultimate disposition of project information. It consists of communications planning, information distribution, performance reporting and administrative closure. It involves creating a communications plan that explains what kind of information should be communicated on a regular basis and who should receive it.

Example: It includes project performance reporting to stakeholders so everyone is on the same page of the project progress, for example, what is outstanding, what is late, and what risks are left to worry about, etc.

8. ***Project Risk Management:*** Project Risk Management describes the processes concerned with identifying, analysing, and responding to project risk. It consists of risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning, and risk monitoring and control.

9. ***Project Procurement Management:*** Project Procurement Management describes the processes required to acquire goods and services from outside the performing organisation. It consists of procurement planning, solicitation planning, solicitation, source selection, contract administration, and contract closeout.

Caution This is imperative for a project manager to know the concepts of the nine knowledge areas. Knowing the concept of the knowledge areas, a project manager can integrate, overlap the process altogether in a cohesive whole to keep planning at a place so that he or she can monitor and control the project effectively.

Self Assessment

Fill in the blanks:

13. The ..... describes project management knowledge and practice in terms of the various component processes.

14. ..... consists of project plan development, project plan execution, and integrated change control.

15. ..... describes the processes required to ensure timely completion of the project.

Case Study

Project Ocean

The city of Philadelphia entered into an agreement with Oracle Corporation to replace its antiquated, custom-built, 30-year-old water billing system that fails to collect all the revenue it should. After three years and spending $18 million on "Project Ocean," the project was two years behind schedule and at almost twice the cost originally envisioned. Moreover, the new billing system still had not been deployed to support its 500,000 customers.

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Philadelphia Chief Information Officer (CIO) Dianah Neff cited technical complexity, administrator turnover, and Oracle's inexperience building such a system as the reasons for Project Ocean's problems. Alan Butkovitz, the City Controller, said that his office is currently reviewing what happened with Oracle, but that it is too soon to speculate as to what went wrong with Project Ocean? An official at Oracle has said that they would deliver on their promise to complete the project and that implementation is "still in progress, and Oracle believes that the work performed to date conforms to the current agreement." Project Ocean is currently on hold until the Mayor's Office of Information Services (MOIS) and other city officials can reach an agreement with Oracle to put Project Ocean back on track. Neff stated that she believes a workable solution can be delivered within 18 months to protect the city's investment.

Former City Water Commissioner Kumar Kishinchand was a vocal critic of Project Ocean since before leaving the Commission after 12 years. Kishinchand believes that Project Ocean was doomed from the start. "One reason is that they picked a company that had never done a water billing system. Oracle had only done viable customer service systems with a small portion for billing purposes. Municipal billing Systems tend to be tremendously complex. The off-the-shelf components of such systems have to be heavily modified, a complex and time-consuming effort." Kishinchand also believes that the project managers did not have much to lose if Project Ocean failed because the city's Finance Department was in charge of the project—not the Water Department, which is the main operator and user of the system. He believes that Neff and the MOIS were interested in building empires because the water billing system takes in over $300 million in revenues a year. Kinshinchand also accused city officials of "putting all of their eggs in one basket [Oracle], without consulting the Water Department."

In rebuttal, Neff contends that MOIS chose the Oracle Enterprise Resources Planning E-Business suite for a number of city uses that include human resources and that the Finance Department made the decision to make water billing the first application. MOIS was then brought in to implement the system once the decision was made. As Neff contends, "it [the water billing system] was a big system, very complicated with very unique features. Hindsight is 20/20 and ERP is difficult anyway." In addition, the system was designed to be run by a number of city departments, but there was constant turnover among executive sponsors. Neff contemplated "Continuity was a problem, and we could have had better-defined business processes. Problems came up between the contractor and business people. As we put it, it was a project that 'washed ashore' for IT to handle."

About 12 months ago, MOIS was assigned to review the work completed on Project Ocean so far. This led to a work stoppage and the suspension of several consultants, Oracle employees, and a private contractor who had been indicted by a federal grand jury in Connecticut on unrelated charges that she had paid a state senator to help her win consulting contracts. While negotiations between the city of Philadelphia and Oracle continue, Neff is preparing to start a new job as a consultant in another city. After five years as CIO, Neff maintains that her impending departure is unrelated to Project Ocean.

Questions

1. Do you believe that the trouble with Philadelphia's water billing system is a technical problem or a people problem? Why?
2. What factors contributed to the problems associated with Project Ocean?
3. Compare the different views the city's MOIS and Oracle may have when negotiating a new agreement that will continue that project.

Source: Matt Hamblen, Philly CIO: Troubled Water Billing System Can Still Work Computerworld, August 10, 6006.

Notes

3.5 Summary

- Project management is the defining factor of an organisation's success which is considered as a meter that gauges the potential risks and finds the solutions to overcome them.
- A project is defined in terms of its distinctive characteristics, that is, a project is a temporary endeavour undertaken to create a unique product or service.
- Project Management tries to gain control over various variables such as time, cost, quality, scope, risk, people and process.
- Each project phase is marked by completion of one or more deliverables. A deliverable is a tangible, verifiable work product such as a feasibility study, a detail design, or a working prototype.
- Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements.
- To help understanding the integrative nature of project management, and to emphasise the importance of integration, project management has been defined in terms of the various component processes and their interactions.
- Project management knowledge areas include all the aspects of the project management that are required for the successful completion of a project on time with the best output.
- The Project Management Knowledge Areas describes project management knowledge and practice in terms of the various component processes. These processes have been organised into nine knowledge areas such as Project Integration Management, Project Scope Management, etc.

3.6 Keywords

Execution: Execution processes coordinates people and other resources to carry out the plan.

Planning: Planning process defines and refines objectives and selects the best of the alternative courses of action to attain the objectives that the project was undertaken to address.

Product-oriented Processes: Product-oriented processes specify and create the project's product.

Project Life Cycle: The project life cycle serves to define the beginning and the end of a project.

Project Management Processes: Project management processes describe, organise, and complete the work of the project.

Project Management: Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements.

Project Manager: The project manager is in charge of gathering, organising, and directing the resources necessary to provide a project with the most efficient result.

Project: A project is a temporary endeavour undertaken to create a unique product or service.

3.7 Review Questions

1. What is project management? Elucidate the importance of project management.
2. What is a project? Discuss the concept of IT project with examples.
3. Discuss the concept of different project variables. Also give examples.

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4. What is the use of project phase in project development? Discuss.
5. Elucidate the concept of project life cycle. Also discuss the common characteristics included in project life cycle.
6. To help understand the integrative nature of project management, and to emphasise the importance of integration, project management has been defined in terms of the various component processes and their interactions. Comment.
7. Make distinction between core processes and facilitating processes.
8. What aspects are included in Project management knowledge areas? Also describe the different types of knowledge areas.
9. Make distinction between Project Integration Management and Project Procurement Management.
10. What processes are used in order to accomplish project management? Explain.

Answers: Self Assessment

1.	Project management	2.	Project manager
3.	Project	4.	quality
5.	Deliverables	6.	project life cycle
7.	change	8.	Computer
9.	product-oriented	10.	Closing
11.	Quantitative Risk Analysis	12.	Output
13.	Project Management Knowledge Areas	14.	Project Integration management
15.	Project Time Management		

3.8 Further Readings

Books

Mike Field, Laurie S. Keller (1998) *Project Management*, Cengage Learning EMEA.

P. Reid Arnold (1999). *Project Management: Getting It Right* , CRC Press

Phillips, J. (2004). *IT Project Management,* 2/E with Cd, McGraw Hill Professional

Schwalbe Kathy (2008). *Information Technology Project Management*, Cengage Learning

Online links

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http://www.projectsmart.co.uk/it-project-management.html

http://www.tutorialspoint.com/pmp-exams/project_ management_ fundamentals.htm

http://pmpcertificationhelp.com/project-management-knowledge-areas/

Notes

Unit 4: Business Process and IT Outsourcing

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Objectives

After studying this unit, you should be able to:

- State the concept of outsourcing
- Discuss the concept of offshore outsourcing
- Discuss the need of outsourcing
- Describe the issues associated with outsourcing
- Explain the concept of planning outsourcing process

Introduction

Outsourcing is any task, operation, job or process that could be performed by employees within your company, but is instead contracted to a third party for a significant period of time. Outsourcing

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has become a frequent management strategy to achieve lower costs, improve organisational focus, and upgrade capability. Many outsourcing contracts are multiyear, multimillion-dollar deals that require approval by an organisation's board of directors. Unfortunately, many problems are associated with outsourcing, including quality problems, legal issues, negative impact on customer relationships, and data and security leaks. The potential for problems is so great that only about half of all outsourcing efforts are considered successful. Thus, the stakes are extremely high and the potential for a major business setback is great. The probability of having a successful outsourcing project can be increased greatly if the business managers who lead the effort are forewarned about potential problems. These managers must be able to choose projects and activities that are appropriate for outsourcing and avoid those that are not. They also must follow an effective outsourcing process to minimise risks and ensure success.

4.1 Outsourcing

Outsourcing is an arrangement in which one company contracts with another organisation to provide services that could be provided by company employees. It is a process where an organisation subcontracts certain functions or processes within a business to a specialist, third-party company.

These activities are something that we often do in our daily lives.

Example: Many people have gardeners or cleaners simply because they do not have the time or inclination to clean their house or mow the lawn. In fact from a business perspective we will rarely see a member of staff cleaning the office at the end of the day, it is nearly always contracted out to a specialist company.

IT outsourcing can be used by most companies and, in fact, many outsource some key IT services without actually realising it.

Example: Many companies outsource their IT support function such as software support and hardware maintenance. It is very rare, especially for small to medium size companies, to retain these support services in-house simply because employing specialist personnel who may only ever be called upon occasionally, is not cost effective. This means that the company has the expertise of a professional but not the overhead or cost of a full-time person.

IT outsourcing is also sometimes known as 'managed services'. This is a very similar system where generally, non-strategic IT functions are subcontracted to a specialist third party organisation.

The outsourcing provider may not necessarily provide all of the services required directly as they may not have the relevant resources or expertise. Quite often certain services are sub-contracted to specialist companies, leaving the original provider to manage those relationships.

There are very few vendors who have a reseller channel that focuses on Outsourced IT solutions although one of the most notable is The Risk Group whose channel provides Backup, Exchange and IT Support services. Organisations like Zensar, an Indian offshore company provide very cost effective services but it's the local reseller community, those 'trusted advisors' like Ramsac and Riven Associates that provide the peace of mind service that end customers require.

Today outsourcing takes many forms and is by no means limited to information technology outsourcing (ITO). Nor is outsourcing used only by large corporations; small and medium-sized organisations have turned to outsourcing to meet their needs. Many organisations contract with

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service providers to handle complete business processes such as accounting and finance, customer services, human resources, and even research and development, in what is called Business Process Outsourcing (BPO). They also outsource selective components of business processes such as benefits management, claims processing, customer call centre services, and payroll processing. Contracts often include an IT component to provide BPO.

Outsourcing can involve the sale of hardware, software, facilities, and equipment used in current operations to the outsourcing service provider. The outsourcing provider then uses these assets to impart services back to the client. Depending on the value of the assets involved, this sale may result in a significant cash payment from the service provider to the customer or vice versa.

Example: Galaxy Nutritional Foods, Inc. is a producer and marketer of plant-based dairy alternatives for the retail and food service markets. Galaxy decided to outsource the manufacture of its food products to Schreiber Foods, and expects to achieve substantial and ongoing cost reductions as a result. However, prior to the completion of the outsourcing, Galaxy had to report a non-recurring charge of $7.9 million. This charge reflected the difference between the carrying cost of production equipment on Galaxy's books and the amount to be received from Schreiber Foods upon sale of the equipment.

A more advanced stage of outsourcing involves evaluating all aspects of an organisation's business activities to take advantage of an outsourcer's best practices, business contacts, capabilities, experience, intellectual property, global infrastructure, or geographic presence by tapping resources and providing capabilities anywhere around the globe. Outsourcing firms that can provide these services are referred to as global service providers (GSP). They fill a higher-level need than outsourcing firms that simply provide low-cost staff augmentation services. GSPs provide high-value services such as performing certain core business processes and enabling new revenue opportunities around the world. A core business process is one that provides valuable customer benefits, is hard for competitors to imitate, and can be leveraged widely across many products and markets. It takes the unique knowledge and skills of the organisation's workers to operate these processes effectively. Core processes typically have a direct impact on the organisation's customers, are major cost drivers, or are essential for providing services.

Example: A core business process for Honda is the design of engines. Honda was able to leverage this process to develop a wide range of quality products, including ATVs, automobiles, lawn mowers, marine motors, motorcycles, personal watercraft, scooters, snow blowers, and trucks.

As an example of a firm that has chosen outsourcing, consider Banco Pichincha. Ecuador's largest private bank has more than 1.5 million clients, a loan portfolio of more than $1.5 billion, and more than 230 branches in Ecuador, Peru, Colombia, Panama, Spain, and the United States. The bank signed a 5-year, $140 million outsourcing contract with Tata Consultancy Services to redesign and develop the bank's core banking solutions and provide BPO services for the bank's operations. Antonio Acosta, joint president of the bank, said, "We chose TCS as our strategic partner on the strengths of its end-to-end technology capabilities, reputation in providing certainty of results, deep domain expertise in banking, and committed scale of operations in this region."

To provide the necessary business process services, TCS will set up a new company in Ecuador with a staff of 500 people supported by TCS's offshore BPO centre in Chile and global delivery centres across the world. TCS will retain all Banco Pichincha's staff that currently are working in these processes and bring in their best human resources and practices worldwide to train TCS employees in Ecuador.

Notes

Task How would you distinguish a global service outsourcing provider from a staff augmentation outsourcing firm?

4.1.1 Types of IT Outsourcing

There are a number of different IT areas that can be outsourced depending on an organisation's requirements and size. IT outsourcing agreements may include all of an IT department, or just particular areas.

Helpdesk or First-line Support

The IT helpdesk acts as the first-line or support function of a company. Employees who are having technical problems can phone the helpdesk and expect support in order to resolve their issues.

The helpdesk can either be a support desk in-house (if the size of the company warrants this) or off-site at a suppliers' premises.

Any employee within the company can phone the support desk at which point the call will be logged or registered. The purpose is to find out whether the problem is a hardware, software or network problem and whether it can be resolved over the phone or whether an engineer will be required to go on site and fix it. This is to make sure that the right resources are allocated to fix a particular problem or if the problem is simple then the helpdesk can often resolve this over the phone

Installation

A part of the agreement may be to install new equipment or IT functionality as and when required and to ensure that users are trained and confident with the new systems.

Software Support

The role of software support is to allow end users to contact a support line to solve a problem, generally over the phone. If not, then an engineer may go to the user to fix the issue, or access the faulty system remotely and solve it.

Hardware Support

Hardware support enables end users to have any hardware problems fixed, such as a faulty PC or printer. This will generally mean that an engineer needs to come out to visit the user to fix the problem.

Some agreements specify that a certain amount of 'hot-swaps' must be available. A hot-swap is a spare piece of hardware, whether a PC, server, printer or even a network card that is swapped with the user's hardware in order that they are able continue working quickly, rather than waiting for the engineer to fix the problem or order the relevant part.

Software Development

Software development is increasingly being outsourced or 'off-shored', with teams (the people who write and design software) based in areas such as Central or Eastern Europe and Asia where

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there is access to highly educated, well trained personnel whose wages are essentially lower than in Western economies.

It is also far more productive and effective to have a team of people used as and when needed rather than having full time developers being paid even when they are not required as can often happen with software development projects. In fact the majority of software vendors have software developers based outside of their country for this very reason.

Caselet

Global Spending on IT Outsourcing will Go up $5 b This Year

Global spending on IT outsourcing services will go up by 2.1 per cent in 2012 to reach $252 billion as against $247 billion.

However, the growth of data centre outsourcing business, which represented 34.5 per cent of the outsourcing market in 2011, will decline by one per cent this year.

While there will be some impact from the ongoing business slowdown due to sovereign debt issues in Europe and slowing exports in China, research and consulting firm Gartner expects the outsourcing market in the emerging Asia-Pacific region to represent the highest growth of all regions.

In North America, buyers will seek to transition more IT work to annuity-managed service relationships for cost take-out and IT costs. "This will keep outsourcing growing through 2016. The reluctance of enterprises to hire or make large capital purchases, as well as their pursuit of asset-light IT strategies, continues to push clients toward consuming externally provided services," Gartner has said in its latest report on outsourcing.

APAC Spending

Spending on outsourcing in the APAC region will grow by one per cent in 2012 and exceed 2.5 per cent growth next year. "The growth is being driven by the large inflow of capital into Asia over the past three to five years, leading to the need among global and regional businesses to scale up their operations," it said.

A challenging economic scenario that worsened in late 2011 continues to affect government policies and end-user sentiment in many key European countries. This could result in a decline of outsourcing growth by 1.9 per cent in Western Europe this year.

The European public sector will continue to see a cautious budget environment throughout the year. This will force many central and local government entities to concentrate on outsourcing initiatives aimed at reducing cost through IT efficiencies and rationalisation.

Fast-Growing Segment

The fastest-growing segment within the outsourcing market is cloud services, which is expected to grow by 49 per cent to $5 billion, up from $3.4 billion in the previous year.

"Continued privacy and compliance concerns may however negatively impact growth in some regions, especially if providers are slow in bringing localised solutions to market," Gregor Petri, Research Director, said.

Source: http://www.thehindubusinessline.com/industry-and-economy/info tech/article3737853.ece?ref=wl_industry-and-economy

Self Assessment

Notes

Fill in the blanks:

1. .....is a process where an organisation sub-contracts certain functions or processes within a business to a specialist, third-party Company.
2. IT outsourcing is also sometimes known as .....
3. The role of ..... support is to allow end users to contact a support line to solve a problem, generally over the phone.

4.2 Offshore Outsourcing

Offshore outsourcing, a type of Business Process Outsourcing (BPO), is the exporting of IT-related work from the United States and other developed countries to areas of the world where there is both political stability and lower labour costs or tax savings. Outsourcing is an arrangement in which one company provides services for another company that could also be or usually have been provided in-house. Offshore simply means "any country other than your own." The Internet and high-speed Internet connections make it possible for outsourcing to be carried out anywhere in the world, a business trend economists call globalisation. In general, domestic companies interested in offshore outsourcing are not only trying to save money in order to be more price-competitive against each other, but also to enable them to compete with businesses in other countries.

Offshore outsourcing is the practice of hiring organisations or employees to perform company tasks overseas.

Example: A company may manufacture and sell computer parts in the United States yet use offshore outsourcing to handle its customer service and technical support phone lines.

Data entry is another job that is frequently outsourced overseas. The Internet has played a major role in outsourcing to other countries, not only allowing companies to outsource work to other organisations and hire employees that are some distance away, but also making is easier to hire freelance workers from around the world, getting projects completed for significantly lower fees.

Example: Offshore outsourcing includes telephone call centres, tech-support and computer programming. More common examples that are not going overseas are janitorial services, after hours answering services and security services.

Offshore outsourcing is often broken up into four main categories. The ITO category involves the overseas outsourcing of a company's information technology. The BPO category involves business outsourcing, which can include call centre management and claims processing. Software development falls under the Software R&D (research and development) category while KPO covers knowledge process outsourcing, which typically involves processes that require a higher level of skill, experience and/or knowledge. These things may include interpreting x-rays and researching investments; they may also include accounting-related tasks or even more technical jobs like engineering.

Often, offshore outsourcing get bad press when companies send work to other countries where they can pay lower wages than are typical in the country in which they are based. Opponents assert that outsourcing overseas takes jobs away from domestic employees and may even hurt the economy. However, this setup isn't criticised only for wages. Some consumers oppose this type of outsourcing as well, asserting that it leads to a decrease in quality, especially when it comes to customer service and technical support.

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Example: There may be a language barrier that leaves customers feeling less satisfied when dealing with an overseas call centre.

Proponents of offshore outsourcing assert that such criticism may be displaced. For example, while some critics claim that overseas outsourcing is responsible for significant levels of job loss, some proponents point to recessions, dot.com fallout, and productivity growth as the real culprits. In fact, some critics claim that offshore outsourcing actually helps the economy in two ways. First, they assert that it lowers costs for everyone across the board. Second, they claim that it creates jobs by making the economy more efficient.

At this time, it looks as if overseas outsourcing will only grow with time. Some experts predict that about one-quarter of IT jobs will be overseas in a few years. However, many experts also suggest that companies proceed slowly and with caution to avoid the loss of talent and preserve performance.

Notes Some small businesses may find ways to use offshore outsourcing to make their businesses more competitive, especially in markets that are currently dominated by large corporations.

Self Assessment

Fill in the blanks:

4. ..... is the practice of hiring organisations or employees to perform company tasks overseas.
5. The ..... category involves the overseas outsourcing of a company's information technology.
6. The ..... category involves business process outsourcing, which can include call centre management and claims processing.

4.3 Need of Outsourcing

The first and foremost reason why companies outsource their processes is the significant and even massive cost reduction that results from outsourcing jobs, processes, businesses, etc. But why is it so? Well, outsourcing lets a company to focus on their core expertise like IT, Hotels, Health, etc. while letting people manage other peripheral (not necessary services nonetheless) services like data entry, employee database, housekeeping, customer support and so on. Such Off sourcing allows the company to turn fixed costs into variable ones, reduces the burden of managing a large workforce and extending them the various company benefits. In fact most of the top companies prefer low-cost destinations like India for their outsourcing needs, whether BPO or other, as they can cut back on a lot of overheads like worker benefits, maximum working hours, etc.

Apart from this Business Process Outsourcing (BPO) and other outsourced processes is an opportunity to get a foot hold in any new country by making new clients (in the form of service providers), setting up new business offices, understanding the domestic market and so on.

Organisations decide to outsource for many reasons. Three of the most frequently cited reasons are to cut or stabilise costs, improve the firm's focus on core operations, and upgrade the firm's capabilities and services.

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- ***To Cut or Stabilise Costs:*** The top reason to outsource is to cut or stabilise costs. Outsourcing service providers typically have a lower cost structure due to greater economy of scale, specialisation, or expertise, which means they can perform the work at a much lower cost than their clients. In addition, the fundamental costs of doing business in a developing country—employee health care, retirement, and unemployment; taxes; and environmental and regulatory compliance—are much lower than those in a developed country. Such cost advantages tip the scales in favour of outsourcing and offshore outsourcing. Thus, organisations that do not outsource probably have greater recruiting, training, research, development, marketing, and deployment expenses. These costs must be passed along in the form of higher prices to the customer, placing the firms at a competitive cost disadvantage.

  One firm that exploits outsourcing to its advantage is Pizza Inn, headquartered near Dallas, Texas. Pizza Inn operates more than 360 restaurants domestically and internationally, and had recent annual sales of about $150 million. The firm outsourced its warehouse management and delivery services and realised a significant reduction in its operating costs. As a result, Pizza Inn was able to reduce the prices of products distributed to its franchisees, thus improving their profitability and, in turn, boosting the firm's operating income. In the fiscal quarter following completion of the outsourcing, general and administrative expenses were slashed 30 percent ($391,000) due primarily to lower payroll costs, plus a reduction in property taxes and insurance expenses.

- ***To Improve Focus:*** Another reason for outsourcing is to enable an organisation to focus on its most important priorities. It is highly ineffective to divert the time and energy of key company resources to do routine work that does not require their unique skills and intimate knowledge of the firm, its products, its services, and its customers. Outsourcing "frees up" a large amount of resources and management effort that can be redirected to other more strategic issues within the company.

Many of the services required to operate an insurance firm, such as billing, human resources, and transaction processing, are important but not essential to future growth. So, insurance firms increasingly are turning to outsourcing to enable them to reduce costs and grow, as they can now focus on their core business.

Example: AIG Entrepreneur specialises in property and casualty insurance for small and medium-sized enterprises. It signed a 10-year, $100 million agreement with the outsourcing firm Accenture to provide IT hardware and software plus insurance support services. The goal is to simplify, automate, and optimise AIG business processes to increase profitability, improve operational performance, and enhance services. Annuity, life insurance, pension, property, and casualty services will be provided through Accenture's multilingual service centre in Bucharest, Hungary. Underwriting, policy, and claims services will be supported by Accenture computer hardware and software.

- ***To Upgrade Capabilities and Services:*** Often, an outsourcing service provider can perform a business process better than its clients ever could. The outsourcing provider might be highly efficient, with world-class capabilities and access to new technology, methods, and expertise that would not be cost effective for its clients to acquire and maintain. Thus, outsourcing a function can provide a considerable upgrade in capabilities and service.

Example: Mumbai International Airport Limited contracted with Tata Consultancy Services to implement and manage the IT infrastructure at Chhatrapati Shivaji International Airport (CSIA). The primary goal was not savings, but to introduce the best technology solutions to build the country's busiest airport into a model, world-class experience that rivals any airport in the world.

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Example: Logistics service providers have developed a wide array of services that enable their clients to improve operating efficiency and effectiveness, reduce inventory, and increase customer service by reducing delivery times and providing delivery status at any point in the pipeline. The providers usually can deliver all these services at a lower cost. As a result, many organisations have outsourced their logistics operations to third-party logistics providers to manage complex global supply chains.

Other reasons for outsourcing are:

- ***Experienced team:*** When you outsource a work you by default get access to an experienced team which can tailor to your needs. You do not need to allocate resources to hire fresh talent and bring them to the speed. This reduces the overall project time, HR work, Office space which can be used for the growth of the business.
- ***Technological expertise:*** Outsourcing companies are up to date with all the latest technologies. The likelihood of having a successful project is increased when you are able to rely on an experienced team of professionals who use the technology you require as part of their everyday business. In this way, they make sure to provide the most advanced and most recent solution to customer needs. This is not limited to the customers only; they provide all the latest Infrastructure technology at their office and to their employees too.
- ***Business Growth*:** By outsourcing you can get relaxed from the tension of your IT needs and focus on the core business. IT is always the backbone of any institution but it is critical that you spent as minimum time on IT because it is not revenue generating rather it is expenditure! Hence, by outsourcing you can schedule your resources in more efficient way to current, critical, or ongoing projects. Finding time for a new project can be difficult when current in-house resources are being utilised to their maximum capabilities.
- ***Timely completion:*** By outsourcing you ensure a timely completion of the project. Since outsourcing is a contract based business DEADLINE is a vital element of it. Any project outsourced is under a contract which ensures that the offshore company meets the project deadline on time. Also, by outsourcing you have a dedicated team of professionals working for you rather than allocating more work to your existing resources.
- ***Long-term Relation:*** By outsourcing you can end up in a long term relationship with the company and can completely rely on your IT needs on them. Since, High technical staff turnover is a major concern of many organisations you do not need to worry about that. When a project is outsourced, the risk of losing knowledge and expertise is significantly reduced. The consulting company as a whole is responsible for completing the project.

Self Assessment

Fill in the blanks:

7. An ..... can perform a business process better than its clients ever could.
8. By outsourcing you can end up in a ..... relationship with the company and can completely rely on your IT needs on them.
9. A ..... is any organisation that provides goods, facilities or services to the public, whether paid for or free, no matter how large or small the organisation is.

4.4 Issues Associated with Outsourcing

While companies can gain many potential benefits from outsourcing, these gains do not come without potential problems. Four areas of risk include quality problems, exposure to legal

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liabilities, negative impact on business partner and customer relationships and satisfaction, and potential data and security breaches.

In a recent Information Week research survey of 420 IT professionals, half of them rated their companies' outsourcing efforts a success (see Table 4.1).

Table 4.1: Results of Outsourcing Projects

Evaluation	Percent of Outsourceing Efforts
Success	50 percent
Netural	30 percent
Disaster	17 percent

Source: http://ebooks.narotama.ac.id/files/Information%20Technology%20for%20Managers/Chapter%204%20Business%20Process%20And%20IT%20Outsourcing.pdf

According to the Diamond Management and Technology Consultants 2006 outsourcing study, 47 percent of outsourcing buyers experienced an abnormal contract termination in the past year, while only 2 percent stated that their outsourcing expectations were exceeded."

While outsourcing may prove beneficial for many companies, several potential issues must be addressed. Any organisation that considers outsourcing must be aware of these issues and develop solutions for them. Various issues are discussed below.

4.4.1 Quality Problems

Outsourcing part or all of a business process introduces significant risks that facilitate the service provider to create quality problems.

Example: The toymaker RC2 is not well-known, although it has major licensing deals with Sesame Street, Winnie the Pooh, Disney, Nickelodeon and Thomas & Friends. The firm works with third-party suppliers in China and Hong Kong to manufacture its products. RC2 and industry observers were shocked in June 2007 when the firm issued a recall for 1.5 million Thomas the Tank Wooden trains and related components that had been contaminated with lead paint. The manufacture of the toys had been outsourced to a factory in Dongguan, China.

4.4.2 Legal Issues

The details of the outsourcing arrangement are documented in a formal contract. The contract describes how responsibilities are divided between the client and the outsourcing firm, what services are to be provided, what service levels must be met, and how problems between the two firms will be resolved. Many outsourcing contracts are multiyear, multimillion-dollar deals that require approval by a board of directors. The average length of an outsourcing contract is five years, so the life of the contract can extend well beyond the reign of the executives who crafted it. As might be expected, ending such mega deals prematurely can generate expensive legal fees.

Example: Sears Holdings, the corporate parent of Sears and Kmart, ended its $1.6 billion, 10-year outsourcing contract with Computer Sciences Corporation after less than one year. Sears Holdings stated that it terminated the contract for cause, while CSC attempted to hold Sears liable for up to $100 million in contract termination fees. It took years to settle the dispute. J. P. Morgan Chase & Co. scrapped a $5 billion service agreement with IBM following its merger with Bank One Corp. Suncorp-Metway Ltd., an Australian banking, insurance, and investment firm that focuses on retail consumers and small and medium-sized enterprises, terminated its

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outsourcing contract with CSC following its acquisition of AMP General Insurance. These examples illustrate the need to include terms of disengagement in the original contract to avoid spending excessive time and money in court.

4.4.3 Negative Impact on Customer Relationships and Satisfaction

Outsourcing can greatly reduce the amount of direct communication between a company and its customers. This prevents a company from building solid relationships with its customers, and often leads to dissatisfaction on one or both sides.

Example: Based on an unusually heavy volume of customer complaints, Dell decided to stop routing U.S. technical support calls for its OptPlex and Latitude notebook computers to a call centre in Bangalore, India. Dell customers complained of language difficulties and delays in reaching senior technicians when speaking to support personnel. The drop in customer satisfaction was noticeable enough to be measured and reported by both Consumer Reports and Technology Business Research.

4.4.4 Data Security and Integrity Issues

Another key outsourcing issue is concern over maintaining data security and integrity to safeguard against data security lapses.

Example: The state of Florida contracted work on its payroll and human resources system to Convergys, a US-based outsourcing service company. Convergys, in turn, subcontracted work to index state personnel files to GDXdata, another US-based firm. GDXdata allegedly outsourced the indexing work to a firm in India, a violation of the GDXdata contract with Convergys. Florida state employees had to be warned that their personal data might have been compromised, including sensitive information about the state's law enforcement agents. Besides the security issues, this example illustrates the need for outsourcing firms to put limits on additional outsourcing and subcontracting.

4.4.5 Special Issues Associated with Offshore Outsourcing

Firms that consider establishing offshore outsourcing agreements must be aware that major differences between outsourcing and offshore outsourcing must be taken into account. The most obvious issues are how to control and manage the work being performed when your outsourcing partner may not speak your language and is guided by different cultural values and industry standards. This issue is only intensified by thousands of miles of separation across multiple time zones and the extreme difficulty of meeting face to face. Such separation creates a high potential for lost productivity due to communication problems and increased opportunity for misunderstandings.

Other issues also are associated with offshore outsourcing:

- ***Cost advantage:*** Salaries in developing countries such as China, India, Latin America, and the Philippines are increasing at more than 15 percent per year. At these rates, the cost advantage to outsource to such countries is being reduced.
- ***Turnover:*** The rate of employee turnover is as high as 50 percent at outsourcing firms in some countries. Thus, there is a high potential that key employees at the service provider for your account or project might leave, causing significant project disruptions or delays.
- ***Intellectual property rights:*** Various countries have widely divergent stances on the protection of corporate data, copyrights, patents and trade secrets. Not only must you consider whether the country has laws to protect your firm's intellectual property, you must ask whether the laws are enforced.

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Example: One U.S. software manufacturer outsourced the code development for a new release of its software to an Indian-based firm. To protect itself, the U.S. firm required the employees of the Indian firm to sign a nondisclosure agreement—a contract in which parties agree not to disclose important corporate information. However, an employee of the Indian firm stole a copy of the code and tried to sell it to a competitor.

Did u know? Despite solid evidence gathered by the FBI, prosecutors in India have failed to convict the man, who continues to work.

- ***Important technology issues:*** The outsourcing firm must be able to provide a high level of system availability and network uptime and guarantee that all processing applications operate efficiently and reliably. High IT reliability, availability, and efficiency are essential so that business processes can be executed on a timely basis without significant service interruptions. The potential for problems is exacerbated by offshore outsourcing with service providers in developing parts of the world.

Now that we have identified many of the issues associated with outsourcing and offshore outsourcing, we will outline an effective outsourcing process that manages these issues.

Self Assessment

Fill in the blanks:

10. The details of the outsourcing arrangement are documented in a ..... contract.
11. Outsourcing can greatly reduce the amount of direct ..... between a company and its customers.

4.5 Planning Outsourcing Process

Outsourcing is like any other business initiative: it takes planning, knowledge, and skill to execute well. As already discussed, roughly 50 percent of outsourcing efforts are considered successful, while the other half are evaluated as so-so or outright disasters. Many of the organisations that were successful carefully planned and executed their outsourcing efforts following a multi-step process. This process is shown in Figure 4.1 and discussed in the following sections.

4.5.1 Establishing a "smart" Outsourcing Strategy

The critical component to obtaining successful results from any outsourcing activity is executive-level understanding and support for a smart sourcing strategy. Smart sourcing is based on analysing the work to be done, its associated current processes, and level of effectiveness and resources required, and then determining the best way to do the work in the future—whether with internal employees, on-shore or off-shore outsourcing firms, or some combination. Organisations that move to smart sourcing recognise that outsourcing is not just about lowering labour costs. Outsourcing can achieve strategic competitive advantages by reducing time to market for new products, cutting the time required for problem resolution, and freeing up resources to enable greater innovation. Armed with this more complete understanding of the potential of outsourcing, the organisation can make better strategic decisions about appropriate activities and projects for outsourcing, as well as which outsourcing firms they will hire. Smart sourcing requires an organisation to work in a true partnership with the outsourcing provider. This partnership must be built on a high level of collaboration, mutual trust and respect, and a sharing of common goals.

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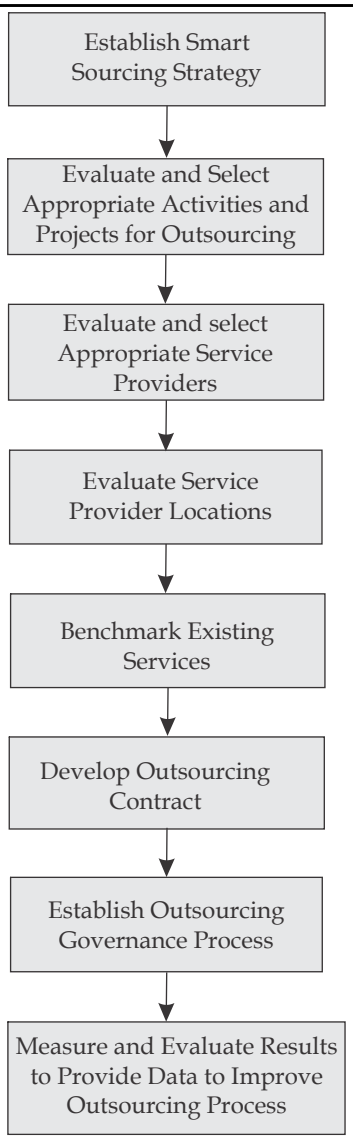
4.5.2 Evaluating and Selecting Appropriate Activities and Projects for Outsourcing

Many outsourcing projects have failed to meet expectations, especially when work was relocated simply to cut labour costs or to clean up a poorly performing operation. Generally, shifting seriously flawed operations to a less expensive organisation does not solve fundamental problems.

Caution An organisation must carefully consider which process and projects it should assign for outsourcing.

Figure 4.1: Multi-step Processes for Successful Outsourcing



Source: http://ebooks.narotama.ac.id/files/Information%20Technology%20for%20Managers/Chapter%204%20Business%20Process%20And%20IT%20Outsourcing.pdf

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The most significant outsourcing risk is dealing with increased management complexity. This level of risk is heightened as the organisation increases the scope of processes being outsourced. Many organisations hesitate to outsource processes that are considered mission critical, that are tightly linked to other key processes, that clearly differentiate them from the competition, or that strongly influence sales. Thus, an organisation's initial experience with outsourcing probably should not involve a critical, core business process. Organisations can ask the following key questions to separate core business processes from their less critical processes:

- How critical is the project or process to unique strategic differentiation?
- How competitive and innovative is the organisation in this business area?
- How cost effective are activities in this business area?
- How much customer value does the project or process provide?

Many companies start with a short-term, low-risk outsourcing pilot effort, perhaps moving responsibility for a small business process to an outsourcing provider that appears to be an attractive, long-term outsourcing partner. They may employ an experienced outsourcing consultant to help get started, provide ongoing feedback, and help evaluate the pilot results. At least six months are required to gain experience with the service provider and work through various start-up issues so that a fair assessment can be made. After this initial experience, the company may want to expand the scope of its outsourcing efforts. It can do so with the experience gained from the initial pilot and try not to repeat the same mistakes. It also will have substantial experience with at least one outsourcing vendor and be in a better position to know what the company needs in an outsourcing partner.

Task Make distinction between outsourcing and smart sourcing.

4.5.3 Evaluating and Selecting Appropriate Service Providers

When outsourcing a major business process or project, an organisation should think in terms of hiring a partner, not just a provider. Thus, choosing the best outsourcing service provider is not based solely on the lowest price quoted or the highest savings promised. Ideally, the organisation can choose an outsourcing firm with which they can build a strong strategic partnership based on a mutually sustained commitment to achieve specific business goals. The customer must use due diligence in carefully researching the potential partner's capabilities and reputation. This research can be conducted through discussions with current and former customers of the firm, seeking input from industry trade groups and consultants, on-site visits to the vendor's facilities, and review of public records related to the firm. These records include Dun & Bradstreet credit reports, filings and reports from the Securities and Exchange Commission (SEC), and articles in trade magazines and the press.

Companies also can research outsourcers through documents generated as a result of the Sarbanes-Oxley Act. This legislation was enacted in response to several major accounting scandals at Enron, WorldCom, Tyco, and other companies in the late 1990s and early 2000s. Under Sarbanes-Oxley, a report filed with the SEC by a publicly held firm must contain a statement signed by the CEO and CFO attesting that the report's information is accurate. Penalties for false attestation include up to 20 years in jail and significant monetary fines. As a result, firms spend considerable time and energy to document and test internal control processes. But what if a fundamental business process is outsourced to a third party? An SAS 70 audit (Statement of Auditing Standards No. 70, Service Organisations) is a tool that can help evaluate an outsourcing firm's internal controls. Under such an audit, the service firm prepares a written document describing its control goals and objectives. An outside service auditor then examines the document and the service firm's operations to render an opinion on several issues:

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- Are the control goals clearly stated?
- Are the controls suitably designed to achieve the service organisation's stated control objectives?
- Are the controls actually being used?
- Are the controls operating effectively (Type 2 SAS 70 audit)?

Firms considering outsourcing need to spend considerable time and effort to thoroughly review the outsourcing firm's SAS 70 audit and ensure that they understand the firm's control goals and implementations. They must be comfortable that the internal controls implemented by their potential partner are adequate. Failure to share the results of an SAS 70 audit should be a warning signal in dealing with an outsourcing vendor. SAS 70 can help evaluate a firm's internal controls, but it does not fully address information security control. ISO (International Standards Organisation) 17799 identifies "best practice" information security controls and their objectives. An organisation considering outsourcing can use this standard to evaluate the service provider's security policy and measures more fully.

In summary, organisations should choose outsourcing firms based on several factors, as listed in Box 4.1.

Box 4.1: Factors for Evaluating Outsourcing Partners

Factors
Poven experience in business outsourcing
Reputation
Knowledge of the industry
Expertise in the organization's processes
Price
Freedom from lowsuits and customer complaints
Final viability
Trustworthiness
Proven high level of innovative and continous improvement
Proven ability to deliver services effectively to the contries in a compan's base operations
Use of best-in-class procsses and technology
Through reviw of the outsourcing firm's SAA 70 audit reveals no problem
Review of the outsourcing firm's security versus ISO 17799 best practices reveals no major outages.

Source: http://ebooks.narotama.ac.id/files/Information%20Technology%20for%20Managers/Chapter%204%20Business%20Process%20And%20IT%20Outsourcing.pdf

4.5.4 Evaluating Service Provider Locations

Any outsourcing service provider, no matter what its base of operations, can be affected by economic turmoil, natural disasters, and political disturbances. The potential for these risks is greater in some places than others. Be sure that you understand the base of operations that will service your needs. Ideally, your outsourcing partner can provide services from several geographic locations if necessary. Your company should investigate the capability for avoiding business interruption whether the outsourcing firm is "on-shore" (in your own country) or off-shore.

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Example: Bangalore, with a population of about 6.5 million, is India's fifth-largest metropolitan area. It often is compared with the Silicon Valley in the United States because many outsourcing service providers have offices there, including Infosys, IBM, Tata Consultancy Services, and Wipro. India's outsourcing industry is an important source of national income, and so it is a prime target of terrorist groups. Indian authorities arrested a suspected member of a terrorist group for plotting attacks on several Bangalore outsourcing firms in 2006. In October 2006, these outsourcing firms closed their Bangalore facilities due to a public sector strike related to a border dispute. In January 2007, they shut down operations because of riots between Muslims and Hindus. In February 2007, they did not open their offices due to a labour strike over a court decision on water distribution from a nearby river.

Other factors when considering location include the availability and reliability of high-speed communications networks and power grids, the availability of sufficiently trained workers, and the effectiveness of the outsourcing firm's national legal system in protecting intellectual property, including copyrights, trade secrets and patents. Of course, the challenges of outsourcing become even more difficult when the work is being done in a country that has significant language, cultural, and time zone differences. Such considerations may force a firm to change its initial choice of outsourcing service partner.

Box 4.2 summarises the factors to consider when evaluating service provider locations.

Box 4.2: Factors for Evaluating the Location of an Outsourcing Provider

Factors
Potential for business disruption has been addressed adequately by the provider through use of effective backup and alternate business recovery sites
Access to high-speed, reliable communications networks is readily available
Access to reliable power grids is readily available
Provider had access to an adequate supply of sufficently trained workes
National legal system supports and enforces the protection of intellectual property

Source:http://ebooks.narotama.ac.id/files/Information%20Technology%20for%20Managers/Chapter%204%20Business%20Process%20And%20IT%20Outsourcing.pdf

4.5.5 Benchmarking Existing Service Levels

Before signing an outsourcing contract, an organisation should benchmark its existing service levels so that it knows how well the services are being delivered and it knows the associated costs. This benchmark can then be used to establish a reasonable baseline for negotiating target results and costs from the outsourcing service provider. The agreed-to targets are then used to define the service-level agreement (SLA) of the contract.

A key to effective benchmarking is choosing the right measures to evaluate the performance of the process. Remember, you get what you measure.

Example: Reasonable metrics for a call centre might be to measure average hold time for customers or the number of abandoned calls. Measuring these parameters and trying to improve performance would lead to better results for the firm and the customer. On the other hand, setting a measure for the average number of calls handled per customer service agent may lead to counter productive behaviour. The agent might not fully listen to the customer and cut the call short to get to the next call.

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The time and cost required to perform a benchmark depends on the size, scope, and complexity of the process being measured and the number of metrics used. It can cost more than $100,000 to hire an outside consulting firm to perform a benchmark. Doing the benchmarking with employees can be much less expensive and take less time because they already are familiar with the people and the process. However, employees need to be trained to perform the benchmark process, and internal benchmarks can be tainted by bias, especially if the people doing the measuring are part of the in-house process.

Notes Increasingly, experienced organisations include broad measures of desired business outcomes into the performance measurements they expect outsourcing partners to deliver. These measures define valuable business benefits that the organisation wants from the outsourcing initiative, including increased speed to market, reduced product or service defects and rework, and lower working capital requirements made possible by higher efficiencies.

4.5.6 Developing an Outsourcing Contract

The development of an outsourcing contract is a job for experienced procurement and legal professionals. Although numerous issues should be addressed, only a few are covered in this section. The ownership of assets and facilities is an important factor in determining the cost of the outsourcing contract. There are three basic alternatives:

- The firm can transfer ownership of the assets along with operational responsibility to the outsourcing service provider. The provider typically offers a financial incentive to do this, such as a reduction in charges or a cash transfer to cover the value of the assets.
- The firm can transfer the assets to a third party (financial services firm) under some sort of leaseback arrangement.
- The firm can retain ownership of the assets while the provider takes on the operational responsibility.

Caution Experienced members of the client's finance and accounting organisation must become involved in analysing the various options.

Example: Electronic Data Systems (EDS) was awarded a $1 billion, 8-year contract to provide a variety of IT services to KarstadtQuelle AG, which is headquartered in Essen, Germany. The firm's core activities include Karstadt department stores throughout Germany, domestic and international mail-order companies, and its tourism business (Thomas Cook). As part of the arrangement, EDS will gain a 75 percent stake in Itellium, the firm's in-house IT subsidiary. EDS will update Itellium's IT infrastructure to form a new outsourcing centre that will serve KarstadtQuelle and other European retailers. As another example, IBM won a contract to manage the IT resources of Switzerland's Banque Cantonale Vaudoise, and is following a similar strategy to create a Swiss-based outsourcing centre for European banks.

The current trend is to reduce the size and complexity of outsourcing contracts. Instead of entering into all-encompassing outsourcing contracts with a single firm, organisations are opting for simpler, more business-specific arrangements that employ multiple service providers.

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Example: One service provider might handle network operations, another might manage servers in data centre environments, and a third could handle the help desk.

The goal is not only to cut costs by fostering competition among the vendors, but to take advantage of each vendor's areas of specialisation and technical expertise. This approach requires that the vendors work well together, cooperating to solve problems and not pointing fingers. It also requires additional overhead in the form of specialists who help manage the relationship with each provider.

Unfortunately, allocating pieces of a major outsourcing contract among several firms is not a foolproof approach to containing project costs.

Example: The UK National Programme for IT in the National Health Service (NHS) has the ambitious goal of electronically linking 50 million patients to 30,000 doctors and 270 healthcare providers by 2010. Healthcare records, appointment details, prescription information, and up-to-date research into illnesses and treatment will be made available both to patients and health professionals. Information will be available over a secure link whenever and wherever health-related decisions must be made. In 2003, the UK government awarded contracts to several IT outsourcing service companies to provide the regional IT systems and services needed to support the project. The UK government allocated $4 billion for the program in 2002, but it is estimated that the program will cost more than $55 billion!

When entering into an offshore outsourcing agreement, it is critical to determine what legal system and which country will have jurisdiction over any contract disputes. Each party in the contract, of course, prefers to have its own country rule.

4.5.7 Establishing an Outsourcing Governance Process

Governance of an outsourcing contract involves formal and informal processes and rules to manage the relationship between the two organisations. Governance defines procedures such as periodic formal reviews between the outsourcing company and its service provider, and explicit escalation procedures in the event of a disagreement. The goal of such procedures is to ensure that the outsourcing initiative succeeds, even as personnel, business needs, and operating conditions change.

Governance requires dedicated, trained vendor relationship professionals to manage the working relationship between the organisation and outsourcing service provider. These relationship managers engage the service provider and work collaboratively to find problems and fix them. Good relationship managers should have excellent communication, problem solving, and negotiation skills. They also need a thorough knowledge of the business processes and technologies involved. Similarly, the outsourcing service provider has invested many years in the recruitment, development, training, and retention of relationship managers. They expect to encounter client relationship managers of similar status, experience, and knowledge that they can work with as equals.

4.5.8 Measuring and Evaluating Results

A key component of governance is to implement ongoing monitoring and analysis of outsourced business processes using an appropriate set of metrics. Such a program will determine if an organisation is realising the full benefits of outsourcing and reduce the degree of operational risk.

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It also will enable the firm to hold its outsourcing provider accountable for implementing corrective action as needed. In a typical contract, if the service provider's performance and costs don't meet the SLA standards, financial penalties can be assessed and the contract can even be terminated.

How frequently measures are taken and how quickly changes are implemented depends on the importance of the business process in meeting true business goals. In 2003, Procter & Gamble signed four major outsourcing contracts, each with a different provider: a $3 billion, 10-year deal with Hewlett-Packard to take over much of the firm's IT services; a 5-year deal with Jones Lang LaSalle for facilities management; a 5-year deal with Sykes Enterprises to outsource customer care, Customer Relationship Management (CRM) applications, and global fulfilment services; and a $400 million, 10-year deal with IBM for human resource services. An organisation of 100 people was formed to focus solely on managing all outsourcing relationships and to avoid losing control of service levels or the scope of the outsourced project. The employees were trained by experts from P&G's Purchasing Department in the best practices for dealing with suppliers. The group includes experts in disciplines from IT to CRM and facilities management. The P&G team uses software to track hundreds of service levels and enter data into a performance scorecard to see how well each vendor is performing. Each member of the team is assigned to "work on just one of the outsourcing contracts, but they interact and keep tabs on how their colleagues manage the other vendors."

Did u know? The ongoing tracking and measurement of important metrics enables the organisation to use the data as feedback, so that each step in the outsourcing process can be improved based on the result of the project.

Self Assessment

Fill in the blanks:

12. ..... is based on analysing the work to be done, it's associated current processes, and level of effectiveness and resources required.
13. Smart sourcing requires an organisation to work in a true ..... with the outsourcing provider.
14. A key component of governance is to implement ongoing monitoring and analysis of outsourced ..... processes using an appropriate set of metrics.
15. A key to effective ..... is choosing the right measures to evaluate the performance of the process.

Case Study

The Sun Microsystems

Service/maintenance contract sales are highly profitable for many high-tech businesses. In order to reap the financial rewards however, a company must have in place a focused channel strategy for implementing and managing maintenance contract sales. It is well documented that an expertly run contract sales program can net a corporation millions in incremental revenue. Without such a program much of that income is lost.

Contd...

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Sun Microsystems is a case in point. When they discovered that this important revenue stream was eroding, they quickly identified the cause: Because their field sales force did not have the "bandwidth" to provide cost-effective service contract sales to small-to-mid-size customers, they were not adequately covering those accounts. This opened the door to third-party vendors and also resulted in customers who were out of warranty or whose contracts had expired. When they needed assistance, those customers would have to renew before they could get service. Needless to say, these were not satisfied customers.

Sun decided to outsource the development of a dedicated TeleServices Center – in essence creating a new distribution channel for this product. Working closely together, they designed and installed an on-site TeleSales Center whose charge is to thwart third-party vendors and to comprehensively target contract renewals in small-to-mid-size accounts.

Selling maintenance contracts requires TSRs who understand the service requirements of each customer. The right TSR has a background in both inside sales and customer service and can identify decision makers and close a sale. In addition, they must be "specialists" in Sun's service products. The typical sales cycle for a renewal contract is 90 days, involves two decision makers, and six-to-twelve conversations with the customer. Each TSR can contact and service 25-30 customers per day, far more than possible with field staff alone.

They developed a Renewal Program based on a 90/60/30-day strategy: Quotes are sent out 90 days prior to the contract expiration date, a phone call is made 60 days prior to the expire date, and the contract is renewed at 30 days.

Results of this program speak for themselves:

- Increased the contract renewal rate 24.6%
- Reduced the cost to retain customers 34.5%
- Lowered the cost of new customer contracts more than 33%
- Freed field staff to focus on major accounts
- Developed a renewal management database to efficiently handle the contract renewal process
- Designed an instructional curriculum that reduced TSR training time by 40%

Question

Analyse how outsourcing helped Sun Microsystems in:

(a) Contract renewal rate.

(b) Contract renewal process.

(c) Reducing TSR training.

Source: http://www.callcentres.com.au/outsourcadv.htm

4.6 Summary

- Outsourcing is an arrangement in which one company contracts with another organisation to provide services that could be provided by company employees.
- IT outsourcing can be used by most companies and, in fact, many outsource some key IT services without actually realising it.
- IT outsourcing is also sometimes known as 'managed services'. This is a very similar system where generally, non-strategic IT functions are sub-contracted to a specialist third party organisation.

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- Off-shore outsourcing is the practice of hiring organisations or employees to perform company tasks overseas.
- Organisations decide to outsource for many reasons. Three of the most frequently cited reasons are to cut or stabilize costs, improve the firm's focus on core operations, and upgrade the firm's capabilities and services.
- While companies can gain many potential benefits from outsourcing, these gains do not come without potential problems. Four areas of risk include quality problems, exposure to legal liabilities, negative impact on business partner and customer relationships and satisfaction, and potential data and security breaches.
- Outsourcing is like any other business initiative: it takes planning, knowledge, and skill to execute well.
- Firms that consider establishing offshore outsourcing agreements must be aware that major differences between outsourcing and offshore outsourcing must be taken into account

4.7 Keywords

BPO: Business process outsourcing (BPO) is the contracting of a specific business task, such as payroll, to a third-party service provider.

Data: Data is information that has been translated into a form that is more convenient to move or process.

GSP: Outsourcing firms that can provide these services are referred to as global service providers (GSP).

ITO: Information technology outsourcing or ITO is a company's outsourcing of computer or Internet related work to other companies.

Off source outsourcing: Offshore outsourcing is the practice of hiring organisations or employees to perform company tasks overseas.

Outsourcing: Outsourcing is an arrangement in which one company contracts with another organisation to provide services that could be provided by company employees.

Service Provider: A service provider is any organisation that provides goods, facilities or services to the public, whether paid for or free, no matter how large or small the organisation is.

***Software*:** Organised information in the form of operating systems, utilities, programs, and applications that enable computers to work.

4.8 Review Questions

1. What is outsourcing? Explain the concept of outsourcing with example.
2. Make distinction between outsourcing and offshore outsourcing.
3. Describe the reasons why organisations turn to outsourcing.
4. What are the different types of outsourcing? Discuss.
5. Can a firm be successful without outsourcing? Discuss the question fully and identify an example to support your position.
6. Discuss the key issues associated with outsourcing.
7. Explain the concept of Planning Outsourcing Process. Give examples.

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8. Describe the issues associated with offshore outsourcing.
9. What are the key areas of risk when a firm enters into an outsourcing effort? How can these risks be reduced by following an effective outsourcing process?
10. Explain how to establish a "Smart" Outsourcing Strategy.

Answers: Self Assessment

1.	Outsourcing	2.	managed services
3.	Software	4.	Offshore outsourcing
5.	ITO	6.	BPO
7.	outsourcing service provider	8.	long term
9.	service provider	10.	formal
11.	Communication	12.	Smart sourcing
13.	partnership	14.	Business
15.	benchmarking		

4.9 Further Readings

Books

Erik Beulen (2011), *Managing* It *Outsourcing*, Taylor & Francis.

Guus Delen (2009), *IT Outsourcing: An Introduction*, Van Haren Publishing,

Ian Tho (2012), *Managing the Risks of IT Outsourcing*, Routledge.

Sundeep Sahay (2003), *Global IT Outsourcing*, Cambridge University Press.

Online links

http://www.sourcingmag.com/content/what_is_outsourcing.asp

http://money.howstuffworks.com/outsourcing1.htm

http://www.plan-net.co.uk/news/item/170.html

http://www.rttsweb.com/outsourcing/issues/

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Unit 5: Corporate Governance and IT

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Objectives

After studying this unit, you should be able to:

- Define the concept of corporate governance and IT governance
- Discuss the process of mitigating IT-related risks
- Discuss the need of understanding IT governance
- Explain IT governance frameworks
- Describe the concept of business continuity planning

Introduction

Corporate Governance refers to the way a corporation is governed. It is the technique by which companies are directed and managed. It means carrying the business as per the stakeholders'

desires. It is actually conducted by the Board of Directors and the concerned committees for the company's stakeholder's benefit. It is all about balancing individual and societal goals, as well as, economic and social goals. Corporate Governance is the system by which organisations are directed and controlled. The business dependency on information technology has resulted in the fact that corporate governance issues can no longer be solved without considering information technology. Corporate Governance should therefore drive and set IT governance. Information technology, in its turn, can influence strategic opportunities as outlined by the enterprise and can provide critical input to strategic plans. In this way, IT governance enables the enterprise to take full advantage of its information, and can be seen as a driver for corporate governance. IT governance and corporate governance can therefore not be considered as pure distinct disciplines and IT governance needs to be integrated into the overall governance structure.

5.1 Corporate Governance

Corporate Governance is the interaction between various participants (shareholders, board of directors, and company's management) in shaping corporation's performance and the way it is proceeding towards. The relationship between the owners and the managers in an organisation must be healthy and there should be no conflict between the two. The owners must see that individual's actual performance is according to the standard performance. These dimensions of corporate governance should not be overlooked.

Corporate Governance deals with the manner the providers of finance guarantee themselves of getting a fair return on their investment. Corporate Governance clearly distinguishes between the owners and the managers. The managers are the deciding authority. In modern corporations, the functions/tasks of owners and managers should be clearly defined, rather, harmonising.

Corporate Governance deals with determining ways to take effective strategic decisions. It gives ultimate authority and complete responsibility to the Board of Directors. In today's market-oriented economy, the need for corporate governance arises. Also, efficiency and globalisation are significant factors urging corporate governance. Corporate Governance is essential to develop added value to the stakeholders.

Corporate Governance ensures transparency which ensures strong and balanced economic development. This also ensures that the interests of all shareholders (majority as well as minority shareholders) are safeguarded. It ensures that all shareholders fully exercise their rights and that the organisation fully recognises their rights.

Corporate Governance has a broad scope. It includes both social and institutional aspects. Corporate Governance encourages a trustworthy, moral, as well as ethical environment.

Example: Toyota Motor Corporation is an example of "Good" Corporate Governance.

5.1.1 Benefits of Corporate Governance

Various benefits of corporate governance include the following:

1. Good corporate governance ensures corporate success and economic growth.
2. Strong corporate governance maintains investors' confidence, as a result of which, company can raise capital efficiently and effectively.
3. It lowers the capital cost.

Notes

4. There is a positive impact on the share price.
5. It provides proper inducement to the owners as well as managers to achieve objectives that are in interests of the shareholders and the organisation.
6. Good corporate governance also minimises wastages, corruption, risks and mismanagement.
7. It helps in brand formation and development.
8. It ensures organisation is managed in a manner that fits the best interests of all.

Self Assessment

Fill in the blanks:

1. ..... Governance deals with the manner the providers of finance guarantee themselves of getting a fair return on their investment.
2. Corporate Governance ensures ..... which ensures strong and balanced economic development.

5.2 IT Governance

IT governance determines how the IT function manages demand, delivers value, and protects against risk. There are many people, processes, and technologies that play a role in keeping IT running. The broad nature of IT governance can make it difficult for IT leaders to know where to focus their efforts to have the greatest impact. IT governance helps firms define who is responsible for what and how IT decisions are taken. It enables IT to adhere to business objectives and maximise value from investment. It can protect against failures that result from the misalignment of IT and business strategies.

Caution There is no single governance model that fits all organisations across all geographies or sectors.

Some organisations give their CIOs a place on the board – or at executive level; others set up governance committees to drive IT; others lack a formal governance structure but embed their CIO more centrally within the corporate structure.

5.2.1 Four Pillars of IT Governance

Organisations should excel in four areas of governance to be effective. For other governance activities beyond these critical pillars of success, we believe IT leaders should assess their organisation's maturity to identify the greatest opportunities for improvement relative to peers.

1. ***Enterprise Architecture:*** Effective architecture governance reduces long-term support costs and enables IT to be responsive to business need. The longer-term strategic benefits, however, are often out-of-synch with project-specific goals and near-term pressures to deliver capabilities. Successful EA groups break this trade-off by moving from red tape stage-gates to a toolkit that is integrated into workflows and accelerates design and development.

Notes

2. ***Portfolio Management:*** All IT organisations must manage high project demand with limited resources. The key is to create a process that builds a portfolio that will generate the most business value. The process must do this quickly and with little overhead. Too little process prevents decision makers from getting the information they need, while too much can cause stakeholders to disengage.

Did u know? Leading IT organisations establish portfolio governance that effectively balances rigor and responsiveness on an ongoing basis.

3. ***Project Management:*** On average, IT delivers only a third of its projects on time, on budget, and with the required functionality. Effective project-level governance improves project success rates. Key factors include establishing a PMO, driving the right level of project methodology, and overinvolving business sponsors and end users in specific stages across the project lifecycle.

4. ***Information Risk and Security:*** The "computerisation" of IT and the emergence of cloud technologies mean that more and more information is located outside the enterprise firewall. Governance of plans, policies and frameworks is critical as organisations experience an explosion in the number and diversity of risks. The way organisations structure the information risk function and its governance mechanisms helps protect technology and information from both internal misuse and external disruptions.

Task Make distinction between portfolio management and project management.

5.2.2 IT Governance Structures, Processes and Relational Mechanisms

The question is: how can enterprises pragmatically implement IT governance? IT governance can be deployed using a mixture of various structures, processes and relational mechanisms. When designing IT governance for an organisation, it is important to recognise that it is contingent upon a variety of sometimes conflicting internal and external factors. Determining the right combination of mechanisms is, therefore, a complex endeavour and it should be recognised that what works for one company does not necessarily work for another. This means that different organisations may need a combination of different structures, processes and relational mechanisms.

To be able to place IT governance structures, processes and relational mechanisms in a comprehensible relationship to each other, the framework displayed in Table 5.1 is proposed. Table 5.1 is based on Peterson's framework.[6] Structures involve the existence of responsible functions such as IT executives and a diversity of IT committees. Processes refer to strategic decision-making and monitoring.

Notes The relational mechanisms include business/IT participation, strategic dialogue, shared learning and proper communication.

Notes

Table 5.1: Structures, Processes and Relational Mechanisms for IT Governance

	Structures	Processes	Relational Mechanisms	
Tactics	IT executives and accounts Committees and councils	Strategic IT decision-making Strategic IT monitoring	Stakeholder participation Business/IT partnerships	Strategic dialog Shared learning
Mechan-isms	- Roles and responsibilities - IT organization structure - CIO on board - IT strategy committee - IT steering committee(s)	- Strategic information systems planning - Balanced (IT) scorecards - Information economics - Service level agreements - CobiT and ITIL - IT alignment/ governance maturity models	- Active participation by principal stakeholders - Collaboration between principal stakeholders - Partnership rewards and incentives - Business/IT colocation	- Shared understanding of business/IT objectives - Active conflict resolution (nonavoidance) - Cross-functional business/IT training - Cross-functional business/IT job rotation

Based on: "Information Strategies and Tactics for Information Technology Governance," *Strategies for Information Technology Governance*, Idea Group Publishing, Pennsylvania, USA, 2003

Source: http://www.isaca.org/Journal/Past-Issues/2004/Volume-1/Pages/IT-Governance-and-Its-Mechanisms.aspx

Caselet

IDRBT, ISACA Tie-up to Promote IT Governance

The Institute for Development and Research in Banking Technology (IDRBT) and ISACA (formerly the Information Systems Audit and Control Association) entered into a memorandum of understanding (MoU) for collaboration.

According to the MoU, both entities would carry out joint activities in the areas of IT governance, information systems audit, security and risk management in banking.

Speaking after signing the MoU, Mr B. Sambamurthy, Director, IDRBT, said that the collaboration would help in disseminating standards, best practices and frameworks.

Mr Vander Wal, International President of ISACA, said his organisation, with nearly 6,000 members in India, was committed to helping organisations strengthen their governance of enterprise IT.

Source: http://www.thehindubusinessline.com/todays-paper/tp-others/tp-states/idrbt-isaca-tieup-to-promote-it-governance/article2448210.ece?textsize=small&test=2

Self Assessment

Notes

Fill in the blanks:

3. ..... determines how the IT function manages demand, delivers value, and protects against risk.
4. ..... governance reduces long-term support costs and enables IT to be responsive to business need.
5. The IT governance structure is supported by administrative and communications personnel who report to the .....

5.3 Mitigating IT-related Risks

In an uncertain and constantly changing environment, having an effective risk mitigation plan and strategy is essential for the growth of any business.

Risk mitigation is basically a process to bring the level of risk to one that is acceptable and can be dealt with by an organisation. Once the risks are identified, it is imperative to prioritise them and develop a risk mitigation plan.

Organisations can cost-effectively mitigate risks to the confidentiality, integrity, and availability of the IT systems and assets that support critical business processes. They can do so by cutting down on operational costs, converting capital expenditure to predictable operational expenditure, getting more from existing infrastructure as well as improving productivity and reducing staffing pressure.

Risks can also be mitigated either in-house or by outsourcing. If huge investments are required for mitigating risks, they can be outsourced to a third party who has the requisite domain knowledge in the 'risk area' and could help reduce the cost by leveraging its infrastructure and experience.

Industry experts believe that organisations do a cost-benefit analysis while selecting controls to mitigate the risk arising from threats that exploit weaknesses within a system. The cost-benefit analysis suggests the use of a strategy to either accept the risk or transfer it.

Besides, to effectively mitigate risks, companies also need to focus on educating their employees. It is critical that every employee understands the importance of confidentiality, integrity, and availability of IT systems and assets.

Example: Risk mitigation include taking positions in financial derivatives that hedge some or all of the risk; buying life insurance coverage; embracing healthier eating habits.

5.3.1 Developing an Effective Strategy

An effective risk mitigation strategy involves identifying the nature of risks associated with each activity and prioritising them; assessing and evaluating the practicability and effectiveness of the risk mitigating solutions, which is further scrutinised through a SWOT analysis; and finally, selecting and implementing the most cost-effective solution, which is then deployed by assigning specific tasks to the team which has the expertise and skill sets to conduct them.

The risk mitigation plan will broadly have the strategy in terms of implementation, tracking and reporting of the controls selected to mitigate risk. The strategy might be to accept the risk or to transfer it. In some cases the risk is so insignificant that it can be avoided but that is equivalent to accepting the risk at that particular level."

Notes

While building a complete strategy to mitigate risks associated with a major disaster, or more common risks in the areas of business operations or data availability, organisations need to take a comprehensive and methodical approach in risk mitigation to ensure business continuity.

Such an approach needs to evaluate and address the priorities and capabilities of the business along three dimensions of risk mitigation. Primarily, understanding the reach and range of the risks in an organisation and its impact within and outside the company is vital. Secondly, perceiving the resilience level of the environment to mitigate risks by identifying the vulnerable areas in the organisation and the capabilities that it possesses to predict, prevent and recover from risks is crucial.

Finally, there has to be an appropriate strategy to recognise and respond to organisational risks while improving the resilience level of the current environment and achieving the desired state of buoyancy in the company.

"Developing an effective risk mitigation strategy is a multi-pronged approach which involves listing out the risks that the organisation is affected by, sieving out those risks which businesses would want to accept and run its operations with while devising a strategy to mitigate those risks that are unacceptable. Lastly, finding out which risks can be mitigated cost-effectively and which can be outsourced for effective operations is vital," added Chandrasekhar Balasubramanian, Country Manager – Infrastructure Risk Management Services, IBM India/ South Asia.

Moreover, a comprehensive and methodical approach to risk mitigation empowers organisations to make informed decisions. The systematic approach would provide a thorough insight into the various anticipated risks and their possible business impact. Organisations will then be able to better evaluate the pros and cons of adopting any particular solution to manage business continuity.

Companies need to critically look at the outcome of structured Risk Analysis and Review (RA&R) and build a risk mitigation strategy followed by a risk mitigation plan. A risk mitigation strategy includes elements such as risk avoidance, risk transfer, risk limitation, etc. One has to recognise that a risk mitigation plan may be a combination of different elements of risk treatment.

Notes Despite deploying several strategies and risk treatment measures, there is always a threat of disaster and that's the key point to note.

5.3.2 Need for a Structured Governance Framework

In risk mitigation strategy, the role of both IT governance and corporate governance are important. IT needs support from corporate to implement a risk mitigation strategy and both need to be incorporated at the same time.

The structured governance framework had significant advantages in risk mitigation. It enables organisations to control planning, development, improvement, and management of incident responses thorough risk assessment. Therefore, a structured governance framework helps in achieving compliance by means of structured auditing and assessment of the risk mitigation processes.

Once an organisation understands the reach and range of the risks to its enterprise, it needs to evaluate its current ability to mitigate those risks. Due to the inherent complexity of most organisations, such an analysis should break down the different aspects of the organisation into multiple layers that can each be viewed separately to see how they can be used to mitigate certain risks.

Notes

We would like to mention here that in order to help with this analysis; organisations like IBM have developed frameworks such as the IBM Resilience Maturity Assessment Framework, which deconstructs a client environment into six layers that include strategy, organisation, processes, technology, applications and data, and facilities.

"A structured governance framework helps the entire organisation to work in a synchronised fashion towards the common goal of risk mitigation. It also enables uniform enforcement across the organisation by a CIO organisation. By adopting a structured framework, we can get good references and case studies and also assistance from the standards bodies."

5.3.3 Plans Falling Short?

Here, we would like mention that risk mitigation plans at many organisations fall short simple because they are not comprehensive and fail to take into account the reach and range of all the risks that they face.

This is also true because the nature of risks is quite diverse. While previously risks were thought of only in terms of technological glitches, the last year and a half showed us that it can be man-made, natural and even from internal sources. Therefore, it is never too late for an organisation to put together a risk mitigation plan. It can bank upon its past learning to build robust risk mitigation systems.

Also, unless the structured governance framework is properly institutionalised, the solution could end up being incomplete and the results would only be visible when the organisation in question tried to recover from a disaster. Besides, the other aspect here is that if the risk mitigation strategy is not aligned with the organisation's business goals then it would be bound to fail and would compromise the organisation's as well as stakeholders' value.

It is, therefore, important to understand the business objectives and provide IT and infrastructure risk management and business resilience expertise, to assess a range of risks to the IT resources and assets on which business processes depend. The whole point here is that companies have to be alert in anticipating possible risks and be quick to learn from their mistakes as well as from those made by others.

Self Assessment

Fill in the blanks:

6. ..... is basically a process to bring the level of risk to one that is acceptable and can be dealt with by an organisation.
7. A ..... governance framework helps in achieving compliance by means of structured auditing and assessment of the risk mitigation processes.

5.4 Need of Understanding IT Governance

Since organisations are increasingly dependent on IT for their operations and profitability, the need for better accountability of technology-related decisions has become a key part of corporate governance, making IT governance a highly strategic subset of the overall enterprise governance.

In the case of IT, governance – or the rules – links IT strategies to the overall enterprise goals and strategies. It also institutionalises best practices for planning, acquiring, implementing and monitoring IT performance; it manages the risks that IT poses to business and it ensures accountability of IT costs.

Notes

Organisations that lack effective governance suffer from low performance, heightened risk exposure, and resource allocation that may appear inappropriate, arbitrary, or political.

On the surface of it, it seems like IT Governance is a lot of trouble for no tangible return. Yet, if we really take the time to think about it, a business runs on information. The decision-makers in the company rely on the data collected, and the information generated by the information systems to make their decisions. An information system that delivers timely and accurate information is an invaluable asset to any company.

And yet, how many companies really have a proper IT policy? Many companies think an information system is a sort of "fire and forget" system — that it can be installed and then left alone to work. Like all systems, however, it will suffer from decay over time. Software becomes obsolete, hardware ages and suffers from wear and tear, and even processes become old and inefficient as new (and more efficient) ways of doing things are discovered.

Caution Proper processes need to be in place to ensure that obsolete software is properly disposed of, and hardware stripped and securely disposed.

Staffs also need to be trained and retrained in the latest processes to ensure that the business retains its competitive edge in the industry. There are few things more dangerous to the health of a company than an improperly managed information systems network. An improperly managed information systems network could leave any and all data vulnerable. If your data is vulnerable, so is your company.

Self Assessment

Fill in the blanks:

8. Organisations that lack effective ..... suffer from low performance, heightened risk exposure, and resource allocation that may appear inappropriate, arbitrary, or political.
9. An ..... that delivers timely and accurate information is an invaluable asset to any company.

5.5 IT Governance Frameworks

While there is no single, complete, off-the-shelf IT governance framework, there are a number of frameworks available that can serve as useful starting points for developing a governance model. As a result, most IT organisations today are "rolling their own" models, but borrowing heavily from existing frameworks. Most of the existing frameworks are complementary, with strengths in different areas, and so, a mix-and-match approach is often taken. Three of those frameworks are discussed in more depth below.

5.5.1 COBIT

Control Objectives for Information and related Technologies (COBIT) was developed in 1996 by the Information Systems Audit and Control Association (ISACA) and is now issued and maintained by the IT Governance Institute (ITGI) as a framework for providing control mechanisms over the information technology domain.

COBIT has been extended to serve as an IT governance framework by providing maturity models, critical success factors, key goal indicators, and key performance indicators for the management of IT. At the heart of COBIT are high-level control objectives. These control objectives

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are grouped into four main domains: planning and organisation, acquisition and implementation, delivery and support, and monitoring. Corresponding to each of the control objectives are detailed control objectives (see Table 5.2).

- ***Planning and organising:*** This domain covers a whole range of topics. Included are the strategy and tactics used by IT to achieve business objectives, strategy planning, strategy communication, strategy management, risk management, and resource management, which insures that the required technology infrastructure and human capital are in place.
- ***Acquisition and implementation:*** For IT to realise its strategy, it must identify, develop or acquire, and implement solutions to business processes. Additionally, it must manage the life cycle of existing systems through maintenance, enhancements, and retirements.
- ***Delivery and support:*** On its most basic level, IT delivers services to its customers (users). This domain concerns service and support issues including performance and security, and it also includes training.
- ***Monitoring:*** All IT processes need to be regularly assessed for their quality and compliance with control requirements. The monitoring domain addresses management's oversight of the organisation's control processes.

Table 5.2: COBIT Control Objectives

COBIT control objectives			
Planning and organizing	Acquisition and implementation	Delivery and support	Monitoring
Strategic planning Information architecture Technological direction IT organization and relationships Manage the IT investment Communicate aims and direction Manage human resources Ensure compliance Assess risks Manage projects Manage quality	Identify solutions Acquire and maintain application software Acquire and maintain technology architecture Develop and maintain IT procedures Install and accredit systems Manage changes	Define service levels Manage third-party services Manage performance and capacity Ensure systems security Identify and attribute costs Educate and train users Assist and advise IT customers Manage the configuration Manage problems and incidents Manage data Manage facilities Manage operations	Monitor the processes Assess internal control adequacy Obtain independent assurance Provide for independent audits

Source: http://i.bnet.com/whitepapers/051103656300.pdf

More recently, COBIT added a set of action-oriented management guidelines to provide management direction for monitoring achievement of organisational goals, for monitoring performance within each IT process, and for benchmarking organisational achievement.

Notes

Did u know? Overall, COBIT represents a comprehensive framework for implementing IT governance with a very strong auditing and controls perspective, which has increasing resonance in the era of SarbanesOxley and other compliance-related regulations and legislation.

5.5.2 ITIL

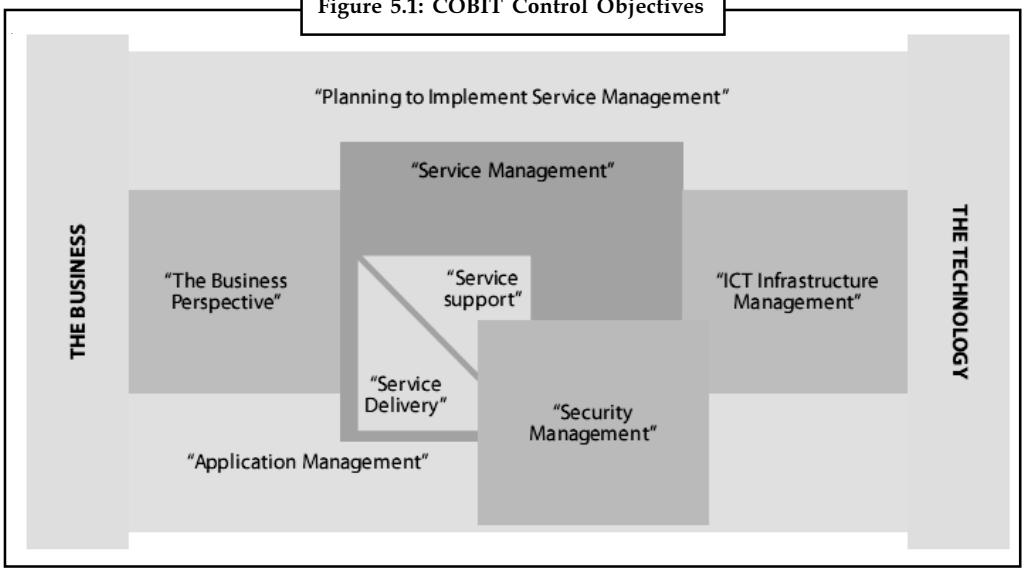
The IT Infrastructure Library (ITIL), initially developed in the UK by the Office of Government Commerce (OGC), is gaining traction in the global IT community as a framework for IT governance.

The library currently consists of eight books, including: "Software Asset Management," "Service Support," "Service Delivery," "Security Management," "Application Management," "ICT Infrastructure Management," "The Business Perspective," and "Planning to Implement Service Management" (see Figure 5.1). ITIL is focused on identifying best practices in regards to managing IT service levels and is particularly process-oriented.

- "Planning to Implement Service Management." This book deals explicitly with the question of where to start with ITIL. It outlines the steps necessary to identify how the organisation would benefit from ITIL. It helps identify current strengths and weaknesses and gives practical guidance on the evaluation of the current maturity levels of service management within the current organisation.
- "The Business Perspective." The Business Perspective is designed to familiarise business management with the architecture and components of information and communications technology (ICT) —infrastructure required to support the business processes. The book helps business leaders better understand the benefits of best practices in IT service management.
- "Software Asset Management." This book encompasses the entire infrastructure and processes necessary for the effective management, control, and protection of the software assets within an organisation, throughout all stages of their life cycle.
- "Service Support." Service Support focuses on ensuring that the customer has access to appropriate services to support their business functions. It covers configuration management and other support management issues including incident, problem, change, and release management.
- "Service Delivery." Service Delivery covers the service the business requires of IT to enable adequate support to the business users. This includes processes for service-level management, availability management, capacity management, ûnancial management for IT services, and continuity management.
- "Security Management." The security management book of ITIL looks at security from the service provider perspective, identifying the relationship between security management and the IT security officer, as well as outlining how it provides the level of security necessary for the entire organisation. It further focuses on the process of implementing security requirements identified in the IT service level agreement.
- "ICT Infrastructure Management." This covers all aspects of infrastructure management from identification of business requirements to acquiring, testing, installation, and deployment of infrastructure components. It includes the design and planning processes, deployment processes, operations processes, and technical support processes.

Notes

Figure 5.1: COBIT Control Objectives



Source: http://i.bnet.com/whitepapers/051103656300.pdf

- "Application Management." Application Management addresses the complex subject of managing applications from initial business requirements through the application management lifecycle, up to and including retirement. A strong emphasis is placed on ensuring that IT projects and strategies are tightly aligned with those of the business throughout the applications life cycle. Once an application is approved and funded, it is tracked throughout its life cycle by the software asset management function of ITIL.

While COBIT takes the perspective of audit and control, ITIL takes the perspective of service management. The two frameworks are more complementary than competitive and components of both can be taken to build a governance framework.

Task Describe the best practices identified by ITIL.

5.5.3 ISO 17799

The International Organisation for Standardisation has developed the third major governance framework, ISO 17799, titled "Information Technology — Code of Practice for Information Security Management."

It was first released by the ISO in December 2000. However, it is based on British Standard 7799, which was finalised in 1999. The intent of the standard is to focus on security and aid an organisation in the creation of an effective IT security plan. The standard has the following high-level groupings: security policy, organisational security, asset classification and control, personnel security, physical and environmental security, communications and operations management, access control, systems development and maintenance, business continuity management, and compliance. The standard is very thorough and covers a great deal of material in a concise manner.

ISO 17799's relatively narrow focus on security makes it unsuitable as the sole basis for an IT governance framework, but since risk management is a component of IT governance, there is relevance to ISO 17799, and parts of it can be adopted in building an overall IT governance framework.

Notes

Self Assessment

Fill in the blanks:

10. ..... is a framework for providing control mechanisms over the information technology domain.
11. ..... is focused on identifying best practices in regards to managing IT service levels and is particularly process-oriented.
12. The intent of ..... standard is to focus on security and aid an organisation in the creation of an effective IT security plan.

5.6 Business Continuity Planning

Business continuity planning involves developing a practical plan for how your business can prepare for, and continue to operate after an incident or crisis. A business continuity plan will help you to:

- identify and prevent risks where possible
- prepare for risks that you can't control
- respond and recover if a risk occurs.

Example: A business continuity plan will help you to respond and recover if a risk such as an incident or crisis takes place.

Business continuity planning is a proactive planning process to ensure that critical services or products are delivered during a disruption. Critical services or products delivered to:

- Ensure survival
- Avoid causing injury
- Meet legal or other obligations of a business.

To permit an organisation to recover its facility, data and assets, a Business Continuity Plan (BCP) includes the following:

- Plans
- Measures
- Arrangements

Preparing a business continuity plan will help your business recover quickly if an incident does happen. You may not be able to predict every kind of incident that could threaten your business, but you can develop a plan that covers a range of incidents.

Example: Natural disasters, computer problems, staffing issues are some of these incidents.

To get the most out of a business continuity plan, you should include a schedule for testing and updating it, making sure you take into account any changes to your business, your industry, or the location you operate in.

Your business continuity plan should contain all of the information you need to get your business running again after an incident or crisis.

Notes

The size and complexity of your business continuity plan will depend on your business. You may choose to have separate risk management, incident response and recovery plans. If you are a small business, you might find a single business continuity plan that incorporates all of these elements suits you better.

5.6.1 Benefits of a Business Continuity Plan

While some companies have developed contingency plans, most have not. This lack of preparedness not only threatens the viability of sectors in Canada, but, as in the case of manufacturing, also jeopardises the delivery of critical goods that depend on complex supply chain systems.

Creating and maintaining a BCP helps ensure that your business has the resources and information needed to deal with an emergency. Other benefits include:

- Enhance your business image with employees, shareholders and customers by demonstrating a proactive attitude.
- Improve efficiency in the overall organisation.
- Identify the relationship of assets both human and financial resources with respect to critical services and deliverables.

5.6.2 Business Continuity Plan Management

Your business continuity plan is a living document. Testing your plan regularly will help you evaluate how reliable it will be if you have to respond to an incident or crisis. You can then update it with any improvements.

You should update your business continuity plan at least once a year. You will also need to update it whenever there are changes in your business, your industry or the location you operate in.

Notes Keeping your staff up to date with any changes to your plan will help them put it into action in case of an incident, which will in turn reduce the impact to your business.

5.6.3 Strategies for Testing your Business Continuity Plan

Some parts of your business continuity plan will be easier to test than others. For areas that are difficult to physically test, consider paper-based exercises and meetings to review and assess the plan.

The following are some strategies for testing your plan.

Drills and Training

You may be legally required to provide training and conduct drills to test some of the workplace health and safety aspects of your business continuity plan, such as fire evacuation plans.

If you deal with hazardous materials, special equipment, or in risky environments, you may need to provide training for your staff so they can do their jobs safely and respond appropriately if there is an incident. Find out what workplace health and safety practice apply to your business.

Notes

Planning Meetings

Planning meetings are a good way to bring staff together to inform them of the business continuity plan and their individual responsibilities in an incident.

Examine the plan as a group to identify problems and solutions. If you have developed a new plan or updated your old one, this will highlight any oversights. You will then be able to modify the plan before undertaking testing exercises.

Example: Training or drills

Scenario Testing

Scenario testing works by simulating a live event and allowing staff to make decisions as the scenario unfolds in much the same way they would in the event of a real incident. At the time of writing scenarios, you should think about the risks to your business that you had identified in your risk management plan. This will help you make the scenarios more realistic and give you a better idea of how effective your plan is likely to be.

Self Assessment

Fill in the blanks:

13. ..... involves developing a practical plan for how your business can prepare for, and continue to operate after an incident or crisis.
14. Preparing a ..... will help your business recover quickly if an incident does happen.
15. ..... works by simulating a live event and allowing staff to make decisions as the scenario unfolds in much the same way they would in the event of a real incident.

Case Study

Corporate Governance Failure in India: Satyam Fiasco

Corporate governance reformers are pushing the idea of majority voting for directors. But that solution, as Joseph Hinsey sees it, won't produce the desired outcome. The answer keeps CEOs and board chairs separate. Key concepts include: Majority voting for directors is a flawed concept that neither enhances shareholder democracy nor improves corporate governance and corporate accountability is best served by separating the CEO and board chair responsibilities. According to Chayes nongovernmental powers also play significant role in the society there fore there must be adequate provisions in the legal system so that the interest of the common investor as well as society as a whole can be protected.

Manson's opinion "what — we are afraid of is that this powerful machine, which so successfully grinds out the goods we want, seems to be running without any [discernible] controls. The young lad mastering the technique of this bicycle may legitimately shout with pride 'look no hands' but this is the appropriate motto for a corporate society."

Dr. Saleem Shaikh & William Rees talk about perspective of corporate governance, role of 'exit and voice in corporate governance, expectations from corporate governance,

Contd....

Notes

ownership and accountability in corporate governance. They also talk about corporate governance and corporate control.

According to Allen the whole basis of the granting by the state of privileges of incorporation needs to be re examined there is a need for a redefining of the nature of company, of its ownership and of its control. In broader terms, the responsibilities and obligations which a company owes to its shareholders, workers, creditors, consumers, and public at large need to be examined at length.

Bryan and Farrell's research work discusses about nature of corporate governance in the developing global economy and pitfalls of this new economic structure. Their paper also discusses about the role of Corporate Governance in the global economy.

Laixiang Sun, Damian Tobin in their research study focuses on firm specific actions that aim to distinguish the firm from its peers. This paper focuses on Corporate Governance reforms and International Listing with special reference to case of Bank of China. It reports the disparity in credit ratings between Chinese Companies listed domestically and those listed on international stock exchanges.

John L. Collyey, Jr. Jacqueline L. Doyle, George W. Logan, Wallace Stettinius in their book titled 'What is Corporate Governance' deals about various aspects of Corporate Governance. This book provides a deep insight to the topic. It also talks about duties and responsibilities of top management towards the stake holders and society in general.

Robert A.G. Monks and Nell Minow's book on Corporate Governance is based on the trends and practices of corporate sector. This book talks about the practical applicability of Corporate Governance. It also explains the importance of Corporate Governance with the help of various real corporate examples.

Corporate failures have reasons first and for most are the bad business plans and poor managerial decisions in some instance the government's pressure and regulatory forbearance is a contributing factor. Second reason of the corporate collapse is fraud or dissimulation by management, ENRON, World Com, Maxwell, BCCI and Polly Pack are some of the examples. In India we have the 3 Satyam Computers: Company Profile Satyam Computer Services (Satyam) is a global information technology (IT) solutions company including application development, maintenance services, consulting and enterprise business solutions, extended engineering solutions and infrastructure management services. The company also offers business process outsourcing services through Nipuna, a majority owned subsidiary of the company. The company primarily operates in the US. The company is headquartered in Secunderabad, India and employs about 51,000 people. The company recorded revenues of $2,138.1 million during the fiscal year ended March 2008, an increase of 46.3% over 2007. The operating profit of the company was $413.8 million during fiscal year 2008, an increase of 40.5% over 2007. The net profit was $421.8 million in fiscal year 2008, an increase of 41.2% over 2007. Satyam offers a wide range of IT solutions to meet today's complex business challenges.

Satyam has partnered with many of the best of breed technology providers in all the solution areas. While the alliance partner provides the software application, Satyam offers professional services including business process consulting, systems integration, custom application development, content development and other consulting and implementation expertise.

Satyam Computers: Failure of Corporate Governance

This fraud that will impact the investors and employees of the company shows a systemic breakdown in audit and board oversight of the company. Questions will need to be asked

Contd....

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to quickly establish how this happened and who caused it to happen." (Rajeev Chandrasekhar, Member of Parliament and President of the Federation of Indian Chambers of Commerce and Industry) As the scandal unfolded, Merrill Lynch (Now with the Bank of America) terminated its engagement with the company. The New York Stock Exchange immediately suspended trading in Satyam shares. Consequently analysts have speculated about the possible negative impact of this scandal on foreign investors' willingness to invest in emerging markets like India. "This news is got to shake investors' confidence. And it is compounded in my mind by what I already call the fear complex that exists around all global markets, I don't know if it will be long, long-term. But you let another shoe or two drop and I would say it would be way worse."

The Securities and Exchange Board of India, the markets regulator in India, has already ordered an investigation into Satyam's fiasco. The Institute of Chartered Accountants of India intends to seek an immediate explanation from Satyam Computer's auditors Price Water House Cooper on the financial fraud revealed before taking any action. Even though the exact nature and causes of Satyam's downfall will only be known once investigations are completed, it appears that ineffective corporate governance and oversight caused Satyam's downfall. "India's corporate governance standards have been put at stake here, the role of the auditors has also come under serious question." (Hitesh Agarwal, Head of Research, Angel Broking).

Many analysts while attributing Satyam's downfall to failure of corporate governance have emphasised on making family owned businesses founders aware of the risks inherent in non adoption of corporate governance frameworks in their true spirit emanating from the reluctance of the owners to introduce transparency and professionalism in their businesses. Even though Satyam Computers had independent directors on their board of directors, their inability apparently due to lack of expertise or knowledge of accounting frauds raises the question of the role and responsibilities as well as qualifications, skills and expertise of independent non-executive directors. ACCA research indicates that failure in corporate governance is a major contributor to the credit crunch and consequently the current financial turmoil. Collapses like Satyam demonstrate that regulatory boxes may have been ticked but fundamental principles of corporate governance have been breached. The charitable explanation for corporate collapses like Satyam is that those responsible did not understand the risks that were being taken thus suggesting a failure of diligence and professionalism. A less charitable explanation is that those responsible knew about the risks but chose to turn a blind eye.

Satyam downfall once again brings into focus the issue of moral and ethical failure. How could the owner and chairman of the company inflate accounting profits without the knowledge of the entire board or any one else in the company? Why did board of directors not question the financial statements? Greater emphasis on professionalism and ethics in business is the need of the hour. That is why ethics and professionalism figure so prominently in ACCA professional accountancy qualification, alongside the need for strong technical financial and accounting skills, and why the demand for people with ACCA international qualification is growing across the world.

It is with deep regret, and tremendous burden that I am carrying on my conscience, that I would like to bring the following facts to your notice:

The Balance Sheet carries as of September 30, 2008:

Inflated (non-existent) cash and bank balances of 50.40 billion rupees ($1.04 billion) (as against 53.61 billion reflected in the books).

Contd....

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1. An accrued interest of 3.76 billion rupees which is non-existent.
2. An understated liability of 12.30 billion rupees on account of funds arranged by me.
3. An overstated debtors' position of 4.90 billion rupees (as against 26.51 billion reflected in the books).
4. For the September quarter reported a revenue of 27.00 billion rupees and an operating margin of 6.49 billion rupees (24 pct of revenues) as against the actual revenues of 21.12 billion rupees and an actual operating margin of 610 million rupees (3 percent of revenues).

This has resulted in artificial cash and bank balances going up by 5.88 billion rupees in quarter-II alone.

The gap in the Balance Sheet has arisen purely on account of inflated profits over a period of last several years (limited only to Satyam standalone, books of subsidiaries reflecting true performance). What started as a marginal gap between actual operating profit and the one reflected in the books of accounts continued to grow over the years. It has attained unmanageable proportions as the size of company operations grew significantly (annualized revenue run rate of 112.76 billion rupees in the September quarter, 2008, and official reserves of 83.92 billion rupees). The differential in the real profits and the one reflected in the books was further accentuated by the fact that the company had to carry additional resources and assets to justify higher level of operations thereby significantly increasing the costs. Every attempt made to eliminate the gap failed. As the promoters held a small percentage of equity, the concern was that poor performance would result in a takeover, thereby exposing the gap. It was like riding a tiger, not knowing how to get off without being eaten. (Excerpt from the resignation letter of B. Ramalinga Raju (Chairman of Satyam Computer Services of India) released by the Bombay Stock Exchange on 7 January 2009).

As Mr. B. Ramalinga Raju, Chairman and founder of Satyam Computer Services resigned after confessing to falsifying accounting records and inflating accounting profits, Satyam shares plummeted 77.69% on the Mumbai Stock Exchange. Analysts and journalists were quick to draw similarities between Enron and Satyam - India's 4th largest software consultancy, system integration and outsourcing firm, listed on the New York Stock Exchange, with network operations in 66 countries across six continents, employing over 50,000 IT professionals and serving over 654 global companies including a large number of Fortune 500 companies. Satyam, the 2008 winner of the coveted Golden Peacock Award for Corporate Governance have faced government and stakeholder's pressure ever since its plan to acquire two infrastructure companies owned by Mr. Ramalinga Raju's sons – Maytas infrastructure and Maytas properties for $1.6 billion was rejected by investors last December. The failed acquisition plan resulted in panic selling by investors causing loss worth millions to investors in India. In the New York Stock Exchange, Satyam's share price plunged by 55%. Mr. Raju in his resignation statement confessed that the acquisition plan was "the last attempt to fill fictitious assets with the real ones." When it failed Mr. Raju had no other option but to resign taking entire responsibility for the accounting fraud but hoping that the company would bounce back. Analysts however have expressed scepticism at Satyam's ability to bounce back. "Satyam was always seen as one of the top Indian IT companies and often represented as shining example of Indian liberalisations and entrepreneurship.

1. In spite of several provisions in Indian constitution and many clauses under UN, still corporate governance is a contemporary issue not only in India but all around the world.

Contd....

Notes

2. In order to make corporate governance successful in India there is a need for a transparent systematic corporate structure, which can define the basic problem areas of corporate governance.
3. Satyam fiasco is a live example of failure of corporate governance.
4. Corporate Governance can be made effective only by educating entrepreneurs about its importance and by making them realise how Corporate Governance can help them in achieving their corporate goals in long run.
5. There is a need for further review of Clause-49 and Voluntary guidelines for CorporateGovernance-2000 and other present provisions regarding corporate governance.

Conclusion

Corporate governance practices have become an essential prerequisite for the ability to acquire and retain financial resources necessary for restructuring long term investment and sustainable growth. At one end of the spectrum in shareholders are the owners of business entity as they are risk takers. At the other end the managers and the executive director of the company who are in control of its day to day affairs. It is the responsibility of entire BODs for smooth running of the company, corporate disclosure and governance requirements through relatives low in some companies, we also changing. Awareness of the development of Accounting Standard, security regulation, globalisation of financial markets worldwide effect of corporate strategies alliance has lad to some alternative view of governance process. In India the situation is alarming there is huge gap between De-jure and De-facto .Thou there are many regulatory provisions in the Indian legislation still there actual implementation is poor and a debatable issue.

A good structure of corporate governance is that encourage balance relationship among shareholders Executive Directors and the BOD. The governance mechanism is shaped by its political, economic and social history and its legal framework.

Questions

1. Give the reasons for corporate failure.
2. How does corporate governance failure in Satyam provide systemic breakdown in audit and board oversight of the company? Discuss.

Source: http://www.ijmrs.com/Published%20Paper/Volume%2001/Issue%2002/ijms/ijms19/ijms19.pdf

5.7 Summary

- Corporate Governance deals with the manner the providers of finance guarantee themselves of getting a fair return on their investment.
- IT governance determines how the IT function manages demand, delivers value, and protects against risk.
- Risk mitigation is basically a process to bring the level of risk to one that is acceptable and can be dealt with by an organisation.
- An effective risk mitigation strategy involves identifying the nature of risks associated with each activity and prioritising them; assessing and evaluating the practicability and effectiveness of the risk mitigating solutions.

Notes

- Control Objectives for Information and related Technologies (COBIT) is a framework which provides control mechanisms over the information technology domain.
- The IT Infrastructure Library (ITIL), initially developed in the UK by the Office of Government Commerce (OGC), is gaining traction in the global IT community as a framework for IT governance.
- The International Organisation for Standardisation has developed the third major governance framework, ISO 17799, titled "Information Technology — Code of Practice for Information Security Management."
- Business continuity planning involves developing a practical plan for how your business can prepare for, and continue to operate after an incident or crisis

5.8 Keywords

Business Continuity Planning: Business continuity planning involves developing a practical plan for how your business can prepare for, and continue to operate after an incident or crisis.

COBIT: Control Objectives for Information and related Technologies (COBIT) is a framework which provides control mechanisms over the information technology domain.

Corporate Governance: It is the system by which organisations are directed and controlled.

ISO 17799: The intent of ISO 17799 standards is to focus on security and aid an organisation in the creation of an effective IT security plan.

IT governance: IT governance determines how the IT function manages demand, delivers value, and protects against risk.

ITIL: IT Infrastructure Library is focused on identifying best practices in regards to managing IT service levels and is particularly process-oriented.

Risk Mitigation Strategy: An effective risk mitigation strategy involves identifying the nature of risks associated with each activity and prioritising them

Risk Mitigation: Risk mitigation is basically a process to bring the level of risk to one that is acceptable and can be dealt with by an organisation.

5.9 Review Questions

1. Explain the concept of Corporate Governance. Also discuss the benefits of Corporate Governance.
2. Describe the relationship between Corporate Governance and IT Governance.
3. Discuss the concept of governance structures, processes and relational mechanisms.
4. What is risk mitigation? Discuss the effective strategy used for mitigating risks.
5. Elucidate the importance of IT Governance.
6. List the available frameworks for developing a governance model.
7. What is COBIT? How does COBIT framework help in providing control mechanisms over the information technology domain?
8. Make distinctions between ITIL and ISO 17779.
9. What is business continuity planning? Discuss the benefits of a business continuity plan.
10. What are the different strategies used for testing your business continuity plan? Discuss.

Notes

Answers: Self Assessment

1.	Corporate	2.	Transparency
3.	IT governance	4.	Effective architecture
5.	Chief Information Officer	6.	Risk mitigation
7.	structured	8.	Governance
9.	information system	10.	COBIT
11.	ITIL	12.	ISO 17799
13.	Business continuity planning	14.	business continuity plan
15.	Scenario testing		

5.10 Further Readings

Books

Calder, Alan (2005), *IT Governance Today*, IT Governance Ltd.

Kieff, F. Scott (2010), *Perspectives on Corporate Governance*, Cambridge University Press.

Selig, Gad J. (2008), *Implementing It Governance*, Van Haren Publishing.

Webber, Larry (2010), *IT Governance: Policies & Procedures*, Aspen Publishers.

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http://www.business.qld.gov.au/business/running/risk-management/business-continuity-planning/whats-in-business-continuity-plan

http://bizmanedge.com/it-division/why-do-we-need-it-governance/

http://its.unc.edu/cio/office-of-the-cio/it-governance/

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Unit 6: Collaboration Tools

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Objectives

After studying this unit, you should be able to:

- Define the concept of collaboration tools
- Describe various collaboration tools
- Identify the features of collaboration tools
- Discuss the shortcomings of collaboration tools
- State the future implications of collaboration tools

Introduction

Collaboration is the action of working with one or more other people to produce or create something. Tool is a device or implement, especially one held in the hand, used to carry out a particular function. 'To collaborate' means to work with others on a non routine cognitive task — that is, working together. We define collaboration tools as those that enable remote collaboration. In many cases, a collaboration tool is synonymous with a communication medium or device. When people are asked to define or suggest collaboration tools, audio conference systems and videoconferencing software typically top the list, reflecting a traditional view that collaboration tools should mimic face-to-face meetings in front of a chalkboard. Perhaps reflecting the predispositions of those designing them, these tools have often emphasised sharing of the physical characteristics of people. While such tools are important and will likely continue to be

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the mainstay of collaboration tool suites for many years, several emerging tools are spawning social practices that may prove to be invaluable in bridging more than just the physical distance between people.

6.1 Collaboration Tools

Information technology can both facilitate and augment the reach and power of collaboration by providing "collaboration tools." Collaboration tools are computing systems that include, as one of their major design goals, features designed to facilitate work that involves more than one person.

Collaboration refers to all processes where people work together to achieve results. With the advent of computers and the Internet, many collaboration tools have emerged.

Example: Early collaboration tools include e-mail, bulletin board, internet relay chat, whiteboard and desktop sharing.

In a collaborative environment a team may be spread out in different locations and work at different times.

Along one simple axis, these tools can generally be categorised as either Synchronous collaboration or Asynchronous collaboration.

Synchronous collaboration tools require a team to work at the same time.

Example: Synchronous collaboration tools include instant messaging, application sharing and whiteboard.

Asynchronous tools allow team to work at different times.

Example: Asynchronous tools include E-mail, bulletin board and web logs.

There are many related terms that are often used in discussions of these tools and their associated practices; among these:

- Social Software
- Computer Supported Collaborative Work (CSCW)
- Collaborative Technologies

Predicting which communication device/medium will make a good collaboration tool can be a tricky business. A good tool should

- promote communication;
- share a diagram, photograph, paper, or similar objects;
- allow natural interactions; and
- be easy to use and learn.

Beyond these basic and, perhaps, traditional characteristics, today's collaboration tools enable persistent micro-interactions—or the sharing of almost trivial updates between collaborators. These interactions, which might not warrant a phone call or extended conversation, typically include very minor details about a collaborator's work or life, allowing for an intimate knowledge of colleagues over long periods of time. The face-to-face equivalent of this interaction might come from sharing an office with a colleague for several months.

Collaborators can also share in virtual environments, which are not subject to the physical constraints present in real life.

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Example: A collaborator might, "teleport" to another location on a whim, creating an opportunity for interaction on a neutral playing field or allowing the meeting itself to become an opportunity for creativity and exploration.

Caution The tools need to facilitate collaboration by making communication among distributed participants as easy and efficient as possible.

Task Make a distinction between synchronous and asynchronous collaboration tools.

Caselet

3DLive: Collaborative Tools get New Dimension

3DLive is an add-on layer to engineering and development tools that allows collaboration across the enterprise.

An engineer working on a product can search for details on it right from a toolbar on his desktop. Where previously, data or textual searches would be done, which were not intuitive and consumed precious time, this is contextual, user-friendly and throws up all details related to the product along with a 3D diagram of it!

One can also navigate through parts — inspect, rotate, zoom and animate its subsystems while it slowly swivels on a turntable. It also allows discussions while viewing the product, using chat mode. With its patented Compass tool, one can see the product in action and obtain contact information of the designer. Passive participants who want to track the product development can use instant dashboard feature.

"Intellectual property today resides in different parts of the world. With India increasingly becoming a hub for technology development, this helps users to connect to their counterparts in other centres," added Mr Andy Kalambi, VP & GM – Asia, ENOVIA, Dassault Systemes.

Drawing a parallel to map portals that have sprung up on the Web (such as Google Earth and Wikimapia), he said that just as netizens can view satellite imagery of their towns and homes without needing to be a geographical information systems (GIS) expert, 3DLive would let users without technical knowledge to obtain information of granular level. "Resources are expensive, and availability of talented engineers is an issue. This product offers the advantage of being simple and so there is less talent needed to contribute to product development," said Mr. Suman Bose, Country Director, Dassault Systemes India.

Ten per cent of Dassault's few million customers worldwide will choose to be early adopters of this software. In India, the firm has over 500 customers. The firm has 25 per cent market share globally.

All other products by the company — such as CATIA for virtual product design, DELMIA for virtual production and ENOVIA for product lifecycle management — blend into 3DLive. In the future, it will cut across competitive PLM applications and will cover all formats used by the 11 verticals, including consumer electronics, retail, apparel, financial services, etc. By making it available online, Dassault expects SMEs to adopt it. "We have also lowered the total cost of expenditure by making it an online product," said Mr Bose.

Source: http://www.thehindubusinessline.in/bline/2007/05/07/stories/2007050701040200.htm

Notes

Self Assessment

Fill in the blanks:

1. ..... refers to all processes where people work together to achieve results.
2. ..... are computing systems that include, as one of their major design goals, features designed to facilitate work that involves more than one person.
3. ..... collaboration tools require a team to work at the same time.

6.2 Various Collaboration Tools

Due to the growth of online tools (a.k.a. "Web 2.0"), the collaborative tools realm has been growing very rapidly. These tools can be classified as follows:

- Email (particularly as used to share documents, schedule meetings, coordinate events and services, host discussions, foster decision-making, etc.)
  - Institutional email services, such as the CalMail service at UC Berkeley
  - Hosted email services, such as Yahoo! Mail, Gmail, and Windows Live Hotmail
- Calendaring and scheduling systems:
  - Institutional calendaring systems, such as the CalAgenda service at UC Berkeley, often based on products such as Oracle Calendar and Microsoft Exchange
  - Hosted calendaring systems, such as Google Calendar
- Content-sharing tools:
  - File shares, e.g. disk space for document storage; file servers; web-based file storage
  - Institutional repositories (e.g. DSpace)
  - Photo sharing services, such as Flickr and Picasa
  - Social bookmarking services, such as delicious
  - Video and podcast sharing services, such as YouTube and iTunesU
- Group interaction tools:
  - Discussion forums:
    - Discussion forums and bulletin boards, such as phpBB
    - Weblogging ("blogging") tools, particularly in the context of trackbacks and
    - commenting that allows bloggers to interact, akin to discussion forums
  - Conferencing tools:
    - Instant messaging and 'chat' tools
    - Voice conferencing tools, such as Skype (or the telephone)
    - Web/video conferencing tools that facilitate virtual meetings, such as WebEx,
    - Microsoft Live Meeting, Adobe Acrobat Connect, and GoToMeeting; and similar
    - Tools focused on teaching and learning contexts, such as TeamSpot

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- Collaborative authoring tools:
  - Wikis, such as Confluence, MediaWiki, and PBwiki
  - Collaborative document editing tools, such as Google Docs, Adobe Buzzword, and signals Writeboard
- Project coordination:
  - Customer relationship management systems, when used to support customer-service provider interactions, or to help coordinate services provided by multiple people or organisations
  - Issue tracking (e.g. ticketing systems, to-do lists)
  - Project management systems (e.g. Microsoft Project, when used in a collaborative manner to assign and track tasks)
  - Time tracking (e.g. milestones, team member work breakdown)
  - Version control systems
  - Workflow systems
- Social networking tools:
  - Facebook, MySpace, LinkedIn, Elgg, Ning, and others; these environments enable users to share personal and group profiles and activity streams, helping them identify and attract collaboration partners.

Today's Web 2.0 technologies are expanding the list of collaborative tools, taking advantage of a growing base of content creators and online experimenters to transition social tools into opportunities for academic collaboration and innovation.

Now, we will explain various collaboration tools based on the activities and opportunities they enable:

- Immediacy
- Enhanced voice communications
- Ambient communications
- Image sharing
- Document construction
- Social interaction
- Geographic richness

6.2.1 Immediacy

The potential of IM (instant messaging) as a collaboration tool should not be overlooked. IM, sometimes referred to as chat or text chat, is a versatile, accessible, and almost universally available tool that supports collaboration in multiple ways. IM is generally viewed as a platform to support synchronous text communication between two or more people using computers, and it excels at that. But it is much more. Many chat/IM client applications support audio chat, video chat, file transfer, and even desktop sharing in addition to simple text chat. Perhaps the greatest feature of IM is the number of people who use it and know how to use it. IM is almost as ubiquitous as e-mail. Indeed, web-based IM is included in all Gmail accounts. Other applications, including Facebook, are building IM into their interfaces. Whether or not you like IM, you will know how to use it.

Notes

Using IM requires that a user have an account with a service such as Gmail, Yahoo, or AOL Instant Messenger (AIM) — and a client application located on the user's computer. Because IM is hosted by a service provider, the network presence, availability, and scalability allow IM users to communicate with other people regardless of service provider or IM client.

Example: Users with an AIM account can easily communicate with people with a Microsoft Network (MSN) account or an Apple MobileMe account.

Once users have an account (usually free) with a service provider and a client application (also usually free) installed on their computer, they can easily text chat with other users anywhere in the world. With client applications that support it, they may also be able to audio chat, video chat, and exchange files through the IM application.

6.2.2 Enhanced Voice Communications

Making a phone call is a natural vehicle for communicating with friends, family and colleagues. However, toll charges can limit time spent in conversation, and a single audio channel limits interaction. Integrating one-to-many voice and video conferencing, recording conversations, and chat offers multiple channels for communicating, sharing, and documenting.

Skype

Skype is a VoIP application that allows users to collaborate over voice channels by calling one another. Skype users download and install a client application, allowing them to use their computers as phones. They can make free voice calls to other Skype users on the network. Skype has caught the imagination of millions of users around the world. By promising free phone calls at a time when users were increasingly unhappy about the cost to make calls, particularly international ones, Skype was soon installed on millions of computers, taking advantage of the value of multiple nodes. For collaborators, Skype allows longer and more frequent interactions, eliminating cost constraints and creating opportunities to record conversations and engage in multiuser conversations.

Notes Foreign-language programs have adopted the tool to encourage conversations between students and native speakers, and researchers have taken advantage of recording capabilities to create another opportunity for archiving conversations and interview notes or making academic podcasts to share research.

6.2.3 Ambient Communications

Ambient communications refers to the ability to ask a question of experts, friends, or acquaintances at any time, regardless of location, provides new levels for sharing and communication. Many tools enable individuals to tap into their network whenever they need help—or even when they don't have much to share.

Twitter

If you have ever had the experience of constantly asking someone in close proximity "what are you thinking about," you intuitively know what it is like to use Twitter. Twitter is designed to support micro-interactions—the incessant flow of the thoughts of a friend or colleague that stream across your screen. So-called tweets are short—limited to 140 characters—and can be

viewed synchronously or asynchronously. Often disjointed, tweets are valuable because of their brevity, their spontaneity, and the context generated by familiarity—either through actually knowing someone or from following their tweets.

For all its potential annoyances, Twitter gives its community (often called the twitter verse) the ability to connect and share deeply. Individuals are able to keep up with the latest updates of friends and colleagues from all over the world. Integration of Twitter with other tools allows sharing of rich media including URLs, pictures, videos, and other items. Twitter is easy to use and versatile, and its community is constantly finding new uses for it.

6.2.4 Image Sharing

Sharing images or photographs is emerging as a new way to establish a common starting point with potential collaborators. Image-sharing sites allow individuals to selectively share pictures, which can become social objects around which users can congregate.

Flickr

The photo-sharing site Flickr is ostensibly a place to share experiences. Through its use of technologies that enhance sharing, however, Flickr qualifies as an online collaboration tool centred on images and visuals.

Flickr accounts are free, and users are encouraged to upload their photos to the site. Using local photo-management software to seamlessly put their pictures online, users can share images with the entire online community, with small groups of colleagues, or with no one at all. Viewers and creators alike can annotate photos, add comments, or even assign freely chosen keywords as tags. Using a "notes" tool, users can highlight parts of a photo by drawing a box around it and then attaching a note. Pictures can also be commented on and collected into groups where discussions can be facilitated. These features have made it a popular tool for art courses, where it encourages people to post their work for the community to review and make suggestions. Scientists have used the site to share, critique, and analyse visual information.

Flickr incorporates Web 2.0 communication tools and has become a site where people meet to share and discuss images. Some people also use the site to emulate the activity of working together on an image. Analysis, comparisons, annotations, publishing, and remixing can all be facilitated using Flickr.

6.2.5 Document Construction

Doing away with the traditional—and often laborious—process of peer editing by exchanging multiple drafts, today's electronic documents allow collaborators to work in a synchronous environment on a single document, essentially peering over each other's shoulders as they type. Co-writing a shared document in real time can prove an effective tool for brainstorming and collectively articulating ideas.

Google Docs

Google Docs is one of several online tools that allow individuals to work together on a shared document. The experience mimics working on a document through word-processing software, except that the work is conducted online and other collaborators can work together in real time.

In the past, collaboration on a document would involve passing a document back and forth between authors. Each author would take a turn at improving the work, often correcting, modifying, or building on the work of the other authors. Even with the use of features that track

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changes, the process could be very tedious and error-prone, opening the door to the loss of changes due to version-control issues, formatting problems, and sometimes the loss of information about who made particular changes.

With Google Docs, authors can work on the same document in real time. Changes can be tracked and attributed, and the document can be shared with a larger group of authors and reviewers as it becomes more polished. Contributors are able to co-author—sometimes even simultaneously—a digital document, creating opportunities on campus for real-time peer editing and research collaboration.

6.2.6 Social Interaction

Who do you know, how do you know them, and are you willing to admit it? This is the question social interaction tools like Facebook and LinkedIn ask. In the process of articulating relationships, users can take advantage of common links and interests to build shared networks and affinity groups.

Facebook

Facebook is an environment that encourages people to connect with others through a social networking platform. Users create profiles to share information about themselves, including their education, interests, and their social goals. Facebook users are also encouraged to find all of the people they are connected to, whether through contacts made offline or through common interests. Facebook makes it particularly easy to publicly share interests or loyalties with others and to promote connections based on interests.

Can Facebook be considered a collaboration tool? As a very "sticky" application (one that users visit often and tend to stay on for extended periods of time), it has a rich feature set that continues to evolve. Facebook is also growing rapidly. While it started off as a tool exclusively for college students, it has quickly penetrated many non-academic peer groups. Usage is almost ubiquitous among North American youth under 25.

Facebook is being used to facilitate serendipitous connections between friends and contacts. It also brings people with similar interests together, from students creating a group page to organise and discuss a project to classrooms creating a shared space to post notes and common questions.

Notes Given its potential to integrate deeply into the practices of a large number of people, it holds great promise as a collaboration tool.

6.2.7 Geographic Richness

Geographic and mapping tools use the power of location to create spatial connections between users, adding a layer of information for users to share and contribute to.

Google Earth

Google Earth is a client application installed on local PCs and uses browser plug-ins and an Internet connection to provide rich, visual, geographic data. Other features enable users to contribute personal coordinates to the data exhibited in Google Earth. Users are encouraged to upload their own sites and pinpoint their location on the map. Browsers can view locations of

interest and simultaneously view the annotations contributed by the user community. By viewing the aggregated collections of favourite spots, users participate in richer interactions related to place, spawning conversations around a common interest in locations.

Did u know? While location-based applications are still in their infancy, considerable effort is going into identifying useful applications that capture how users would like to interact with and share their location information.

Task Make distinction between Google Docs and Google Earth.

Self Assessment

Fill in the blanks:

4. ..... sometimes referred to as chat or text chat, is a versatile, accessible, and almost universally available tool that supports collaboration in multiple ways.
5. ..... sites allow individuals to selectively share pictures, which can become social objects around which users can congregate.
6. ..... is one of several online tools that allow individuals to work together on a shared document.
7. Geographic and mapping tools use the power of location to create spatial connections between users, adding a layer of ..... for users to share and contribute to.
8. ..... is a client application installed on local PCs and uses browser plug-ins and an Internet connection to provide rich, visual, geographic data.
9. ..... refers to the ability to ask a question of experts, friends, or acquaintances at any time, regardless of location, provides new levels for sharing and communication.

6.3 Collaboration Tool Features

With these technologies in mind, we might add new features to our list, including features that may permit or promote new and different types of collaboration. Their inclusion in emerging tools gives each its own feel and culture and may promote entirely new types of interaction.

- ***Multiple Collaborators:*** How many collaborators can contribute with a particular tool? What is the limit on the number of collaborators for an effective interaction?

Example: A phone call is usually a dyad, while a conference call can include several participants. Yet, there is a limit on how many people can actively participate in a conference call.

- ***Synchronous versus Asynchronous Collaboration:*** Does the tool support instant, real-time collaboration, or is the interaction more of an iterative process based on taking turns? Twitter, IM, and chat are synchronous; e-mail is iterative. However, while Twitter, IM, and chat transcripts can be saved for asynchronous viewing later; there is always a time delay between sending an e-mail and getting a response.

Notes

Caution It may not be long, but it is not instantaneous in the way that Twitter, IM, and chat sessions are.

- ***Role-Based Sharing:*** How are products of the collaboration shared? Are they made public, or can they be restricted to only those who participated? Can the collaboration be shared with wider audiences as it becomes more refined? Blogs and wikis may be configured as "open" or "moderated" based on the preferences and objectives of the creator(s).
- ***Discoverable Collaborators:*** Do collaborators find one another through prearranged channels or personal connections, or are they able to find one another through a common interest in a topic? Can collaborators find one another by shared interest? Are they able to associate by location or by affiliation? Many social networking sites require an invitation to join an affinity group. Some membership sites require a reference from a member, while others are completely open to anyone who wants to join. Does exclusivity ensure a more robust network?
- ***Ownership of Contribution:*** Is it clear who "owns" a particular contribution? Can you track contributions and attribute them to specific authors? In some tools, collaborators are represented by different colours. Are collaborators able to modify the work of others? Can the history of the shared resource be tracked?
- ***Playful or Engaging:*** Is the collaboration tool playful? A tool like Flickr encourages playful dialogue around photos and themes. Second Life encourages play. MySpace and Facebook actively promote playful interactions between multiple participants.
- ***Social:*** Is the tool social? Does it permit serendipitous discovery of peers, friends, and topics of interest leveraging your existing network? Does it allow you to post updates (or micro-updates) about yourself? Are you able to connect to and work with those of your network with whom you are most compatible?

Self Assessment

State whether the following statements are true or false:

10. Twitter, IM, and chat are considered as asynchronous collaboration tool.
11. MySpace and Facebook actively promote playful interactions between multiple participants.

6.4 Shortcomings of Collaboration Tools

For every effective collaboration tool with well-implemented features, there are tools that do not succeed. The shortcomings of failed projects range from simply having an unintuitive, clunky interface to being too expensive or requiring too much hardware.

Example: Lotus Notes is a powerful, multi-featured collaboration tool that imposed too large a resource burden on users and administrators and was not able to successfully make the transition from proprietary server/client application to accessible, user-friendly web application.

The challenge for any collaboration tool is to offer a combination of the following features:

- Richer experience than any previous tool
- Easier to use than other tools
- More cost-effective than competing tools

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A new tool may earn an advantage by emulating an existing tool and building a loyal user base. These loyal users may then discover the potential of the tool to support new uses and connections.

Finally, a tool should not appear before its time. It is possible for a tool to be released that is so radically different, so unlike other tools, that it will bewilder potential users. The Apple Newton was too far ahead of its time but became the foundation for subsequent handheld mobile devices. Finding compelling, powerful, yet easy-to-use tools with the features that keep users engaged and happy is a daunting challenge.

Self Assessment

State whether the following statements are true or false:

12. Lotus Notes is an example of a powerful, multi-featured collaboration tool that imposed too large a resource burden on users and administrators.
13. A tool should appear before its time.

6.5 Implications for the Future

While Internet tools are ushering in new capabilities for collaboration, knowledge creation, and collective intelligence, traditional collaborative activities are also being enhanced by these tools. Participants can connect and communicate through more and richer channels to augment conversation. In addition to communication by talking, collaborators can add video, shared desktops, shared PowerPoint slides and flowcharts, and group Internet browsing. The sharing of additional media can happen in an impromptu manner that sometimes allows individuals to spontaneously reveal aspects of themselves. Tools that feel natural are more likely to promote greater flexibility with interactions. In addition to facilitating traditional collaborative relationships between parties that know one another, these tools also promote serendipitous collaborations among strangers. Interested parties can find and identify one another based on common interests and shared affiliations.

Additional channels allow participants to employ the medium that best fits a particular communication and learning style. Visual collaborators can add a shared image, auditory collaborators can post audio files or use VoIP tools, and people who prefer text have multiple avenues of collaboration.

New collaboration tools and associated best practices are emerging almost daily. While users may feel frustrated with their ability to keep up with the very latest, this frustration may be misplaced. Instead, we might focus on the process of integrating a new tool for collaboration: Think twice before discarding a tool that works.

In general, the tool that people know how to use and feel comfortable with and that is the first one they reach for is probably the tool to use.

Did u know? Any new tool should introduce new capabilities over the tool it replaces.

Important improvements are those that permit or promote new and better ways of doing things. The tool that allows cheaper voice communication may gain a foothold against a more expensive tool. The tool that permits sharing of files during a voice communication may win fans for its convenience. The tool that seamlessly integrates with other tools is more likely to be adopted.

Ultimately a tool should respect user time and reflect the values of the user. While a tool may appear to be a neutral communication medium, the uses that fans and users come up with is likely greatly influenced by the features and capabilities of the tool itself.

Notes

Self Assessment

State whether the following statements are true or false:

14. Tools that feel natural do not promote greater flexibility with interactions.
15. The tool that seamlessly integrates with other tools is more likely to be adopted.

Case Study

Alcatel-Lucent Enters a New Era of Enterprise Collaboration with Jive Social Intranet

Alcatel-Lucent is a global leader in telecommunication technologies, including mobile, fixed, IP, and optics, as well as a provider of telecom applications and services. The company is headquartered in Paris, with over 77,000 employees and operations in more than 130 companies. Alcatel-Lucent includes research and development pioneer Bell Labs and counts among its employees some of the most respected experts in virtually every area of telecommunications.

Going Social

The journey began in 2009, just three years after the merger that teamed French telecom giant Alcatel with U.S.-based Lucent Technologies, itself a descendant of Bell Labs and Western Electric. The combined companies have a long record of technological leadership going back more than a century. But like most companies, they were neophytes when it came to social business standards.

Late that year, Alcatel-Lucent decided to shake things up, and began investigating potential community-of-interest and social networking platforms. They implemented a pilot project running Jive in a sandbox, and soon discovered that it could serve both as a community platform and a social network solution. At the same time, company executives had become convinced that they needed better cross-departmental collaboration. Jive looked like the potential game-changer they were seeking.

Choosing Jive

Haran Sold, Senior Vice President and Managing Director of Business Operations at Alcatel-Lucent, was tasked with finding a solution. He says Jive offered multiple advantages over competing products: "The Jive platform impressed us on a number of levels. It had a rich feature set of community and social functions, yet most people found it easy to use. It had mobile support for anytime, anywhere access. We also liked the public and private cloud deployment options, which gave us the option of hosting it on our own premises if we chose."

Sold noted that Alcatel-Lucent is a large company with resources and technical expertise spread around the globe. "We have the usual challenges of a large global company, and too often individuals had little visibility into what was going on beyond their own team, even in some cases when that could make a difference in the work they are doing," he says. "We wanted to make it much easier for all of our people to be able to tap into our own considerable expertise so we could leverage their experience as we work on solutions for customers and enable all of us to work more efficiently. We were looking for a collaborative

Contd....

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platform to help us answer our need to bring tighter cross organizational collaboration"

True to its research heritage, the company had experimented with various approaches. "We had an old intranet that people seldom visited. We had multiple collaboration tools, but unless you already knew about them, it was unlikely that you would stumble on them and discover things of interest." The company also tried Twitter-style microblogging, but that didn't address the company's need for deep collaboration.

Rapid Deployment, Swift Adoption

Eventually the decision was made to go with Jive, and things moved ahead quickly. "The roll-out was easy," says Jem Janik, now enterprise community manager at Alcatel-Lucent. "Three weeks after we signed our contract, Jive's service team had migrated our sandbox trial to a full production environment, and we opened the doors to employees."

Alcatel-Lucent's Jive-powered "Engage" community was launched in April 2010 with little fanfare. "We didn't feel it was quite ready for prime time," Janik says. "We hadn't branded it with our own look and feel yet, and there was no corporate authentication. So all we did to announce it was to send an email to 100 people who'd been involved in the pilot, inviting them to try it out."

The community team never expected what happened next. From those first 100 users, word of the new community spread virally, and by the time Alcatel-Lucent rolled out the branded, mature version of Engage several months later, 10,000 users had signed up. "We were amazed," says Janik. "We'd set an adoption goal of 10,000 for the first year."

The community's rapid growth was surprising not only because the company had done so little to publicize it, but also because so many of Alcatel-Lucent's employees weren't exactly members of the social networking generation (although the advanced communications technology developed by Alcatel- Lucent had made the social networking generation possible).

"We have a mature workforce," says Janik. "So we thought it might take some effort to get them using social business tools. But this is a technically sophisticated group and the fact that they joined so readily speaks to the pent-up need and the willingness of this team to experiment and try new things. Earlier file sharing platforms didn't meet this technically savvy group's expectations of speed and efficiency, but with Engage, users could sign up, launch a group, or start a discussion, and start working without any assistance. People really took advantage of that."

Major Business Impacts

Adoption continued to grow by leaps and bounds after the official launch, and today, about 75% of Alcatel-Lucent's 77,000 employees have joined the community. "Engage has became the place where the majority of the company gets together to work and discuss our business," says Sold.

In responses to internal surveys, Alcatel-Lucent employees say Engage has made it easier to reach people, to find information and experts, and to stay informed on the company and its direction. "If you add up all the time savings and improved employee collaboration, that's a tremendous business impact," says Sold.

The system has also improved top-down communications. Alcatel-Lucent CEO Ben Verwaayen uses Engage's blogging feature to communicate regularly with employees, and other executives have followed suit. Verwaayen's posts receive tens of thousands of views. "Now employees feel they have a real dialogue with the senior leadership," Janik

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says. "It's made us more of an open culture, and it's increased broad participation and effective decision-making." Sold cites a few examples:

- Alcatel-Lucent's IT department was considering changes to the conference bridging system that they thought would be more cost effective. After soliciting employee inputs via Engage, they realized the new system would actually be less economical in the long run, and they abandoned the plan.
- Prior to its annual leadership meeting, Alcatel-Lucent held company-wide discussions in Engage, gathering employee concerns and feedback, which helped set the agenda for the meeting.
- A product group wanted to brainstorm concepts for new mobile apps so it created a group in Engage. They'd hoped to come up with 100 ideas in two weeks, but received 200. "The low barrier for open collaboration is bringing us plenty of useful ideas," says Sold.

Speeding Ahead

Employees continue to join Engage at a very rapid clip (500-1,000 per week), and as the community grows, its impact multiplies. Janik and the community team aren't sitting still, either. They're working with employees to drive greater activity and instill best practices.

Among its planned improvements to the system, Alcatel-Lucent is looking to implement both Jive's mobile capabilities—enabling employees to access the community on the go—and Jive's SharePoint connector. "The two systems are complementary," says Janik. "SharePoint has good document storage and custom list capabilities. Jive is better at supporting information discovery and sharing, discussions, and social interaction. Jive's ability to integrate with SharePoint means we can provide a seamless user experience regardless of which environment you're working in. In just three years Engage has become ingrained in our corporate life, and Jive has really been a partner in making that happen."

Question

Analyse the case study and describe how Jive helped in increasing broad participation and effective decision-making.

Source: http://www.jivesoftware.com/customers/case-studies/alcatel-lucent

6.6 Summary

- Collaborative tools are computing systems that include, as one of their major design goals, features designed to facilitate work that involves more than one person.
- Due to the growth of online tools (a.k.a. "Web 2.0"), the collaborative tools realm has been growing very rapidly.
- IM, sometimes referred to as chat or text chat, is a versatile, accessible, and almost universally available tool that supports collaboration in multiple ways.
- Skype is a VoIP application that allows users to collaborate over voice channels by calling one another.
- Twitter is designed to support micro-interactions—the incessant flow of the thoughts of a friend or colleague that stream across your screen.

Notes

- The photo-sharing site Flickr is ostensibly a place to share experiences. Flickr incorporates Web 2.0 communication tools and has become a site where people meet to share and discuss images.
- Google Docs is one of several online tools that allow individuals to work together on a shared document.
- Facebook is an environment that encourages people to connect with others through a social networking platform.
- Google Earth is a client application installed on local PCs and uses browser plug-ins and an Internet connection to provide rich, visual, geographic data.

6.7 Keywords

Collaborative tools: Collaborative tools are computing systems that include, as one of their major design goals, features designed to facilitate work that involves more than one person.

Facebook: Facebook is an environment that encourages people to connect with others through a social networking platform.

Flickr: Flickr is the photo-sharing site which is ostensibly a place to share experiences.

Google Docs: Google Docs are one of several online tools that allow individuals to work together on a shared document.

Google Earth: Google Earth is a client application installed on local PCs and uses browser plug-ins and an Internet connection to provide rich, visual, geographic data.

IM: IM, sometimes referred to as chat or text chat, is a versatile, accessible, and almost universally available tool that supports collaboration in multiple ways.

Skype: Skype is a VoIP application that allows users to collaborate over voice channels by calling one another.

Twitter: Twitter is designed to support micro-interactions—the incessant flow of the thoughts of a friend or colleague that stream across your screen.

6.8 Review Questions

1. Explain the concept of collaboration tools with examples.
2. List the different types of collaboration tools. Also give examples.
3. What is instant messaging (IM) tool? Discuss the use of IM tool with example.
4. Describe the tool which allows users to collaborate over voice channels by calling one another.
5. Make distinction between Enhanced Voice Communications and Ambient Communications.
6. Elucidate the concept of sharing images or photographs by using collaboration tool. Give example.
7. How Google Docs allow individuals to work together on a shared document? Explain.
8. Which tools are used for Social Interaction? Discuss with examples.
9. Discuss the various features of collaboration tools.
10. Explain the shortcoming of collaboration tools.

Notes

Answers: Self Assessment

1.	Collaboration	2.	Collaborative tools
3.	Synchronous	4.	IM (instant messaging)
5.	Image-sharing	6.	Google Docs
7.	information	8.	Google Earth
9.	Ambient Communications	10.	False
11.	True	12.	True
13.	False	14.	False
15.	True		

6.9 Further Readings

Books

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Ollus, Martin (2008). *Methods and Tools for Collaborative Networked Organisations*, Springer.

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http://mashable.com/2012/09/07/social-collaboration-tools/

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http://www.keepandshare.com/blog/2010/12/04/5-key-features-of-a-web-collaboration-tool-for-virtual-teams/

Notes

Unit 7: Wireless Networks

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Objectives

After studying this unit, you should be able to:

- Define the concept of wireless communications
- Identify the types of wireless communication
- Discuss cell phone services in wireless communication
- Explain the concept of Wi-Fi
- Describe the concept of Wi-Max

Introduction

The term "Wireless" came into public use to refer to a radio receiver or transceiver (a dual purpose receiver and transmitter device), establishing its usage in the field of wireless telegraphy early on; now the term is used to describe modern wireless connections such as in cellular networks and wireless broadband Internet. It is also used in a general sense to refer to any type of operation that is implemented without the use of wires, such as "wireless remote control", "wireless energy transfer", etc. regardless of the specific technology (e.g. radio, infrared, ultrasonic, etc.) that is used to accomplish the operation. The term wireless network refers to any kind of networking that does not involve cables. It is a technique that helps entrepreneurs and telecommunications networks to save the cost of cables for networking in specific premises in their installations. The transmission system is usually implemented and administrated via

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radio waves where the implementation takes place at physical level. Wireless network is a network set up by using radio signal frequency to communicate among computers and other network devices. Sometimes it's also referred to as Wi-Fi network or WLAN. This network is getting popular nowadays due to easy to setup feature and no cabling involved. You can connect computers anywhere in your home without the need for wires.

7.1 Wireless Communications Fundamentals

Wireless communication is the transfer of information over a distance without the use of electrical conductors or wires. The distances involved may be short (a few meters as in television remote control) or very long (thousands or even millions of kilometres for radio communications). When the context is clear the term is often simply shortened to wireless. Wireless communications is generally considered to be a branch of telecommunications.

Wireless communications encompasses various types of fixed, mobile, and portable two way radios, cellular telephones, personal digital assistants (PDAs), and wireless networking.

Example: Other examples of wireless technology include GPS units, garage door openers and or garage doors, wireless computer mice, keyboards and headsets, satellite television and cordless telephones.

The term "wireless" has become a generic and all-encompassing word used to describe communications in which electromagnetic waves or RF carry a signal over part or the entire communication path.

Example: Wireless equipment in use today include:

- Land Mobile Radio and Specialised Mobile Radio typically used by business, industrial and Public Safety entities
- Consumer Two Way Radio
- The Amateur Radio Service
- Consumer and Professional Marine VHF Radios
- Cellular Telephones and Pagers
- Global Positioning System (GPS)
- Cordless Computer Peripherals
- Cordless Telephone Sets
- Satellite Television
- Wireless Gaming

Wireless communication may be via: radio frequency communication, microwave communication, or short-range communication infrared (IR), short-range communication.

Example: Microwave communication: long-range line-of-sight via highly directional antennas. Short-range communication: from remote controls or via IRDA.

Applications may involve point-to-point communication, point-to-multipoint communication, broadcasting, cellular networks and other wireless networks.

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The term "wireless" should not be confused with the term "cordless", which is generally used to refer to powered electrical or electronic devices that are able to operate from a portable power source (e.g. a battery pack) without any cable or cord to limit the mobility of the cordless device through a connection to the mains power supply. Some cordless devices, such as cordless telephones, are also wireless in the sense that information is transferred from the cordless telephone to the telephone's base unit via some type of wireless communications link. This has caused some disparity in the usage of the term "cordless", for example in Digital Enhanced Cordless Telecommunications.

In the last 50 years, wireless communications industry experienced drastic changes driven by many technology innovations.

7.1.1 Advantages of Wireless Communications

Wireless communication has the following advantages:

1. Communication has enhanced to convey the information quickly to the consumers.
2. Working professionals can work and access Internet anywhere and anytime without carrying cables or wires wherever they go. This also helps to complete the work anywhere on time and improves the productivity.
3. Doctors, workers and other professionals working in remote areas can be in touch with medical centres through wireless communication.
4. Urgent situation can be alerted through wireless communication. The affected regions can be provided help and support with the help of these alerts through wireless communication.
5. Wireless networks are cheaper to install and maintain.

7.1.2 Disadvantages of Wireless Communications

The growth of wireless network has enabled us to use personal devices anywhere and anytime. This has helped mankind to improve in every field of life but this has led many threats as well.

Wireless network has led to many security threats to mankind. It is very easy for the hackers to grab the wireless signals that are spread in the air. It is very important to secure the wireless network so that the information cannot be exploited by the unauthorised users. This also increases the risk to lose information.

Caution Strong security protocols must be created to secure the wireless signals like WPA and WPA2. Another way to secure the wireless network is to have wireless intrusion prevention system.

7.1.3 Types of Wireless Communication

The different types of wireless communication technologies include:

1. ***Infrared (IR) wireless communication:*** IR wireless communication communicates data or information in devices or systems through infrared (IR) radiation. Infrared is electromagnetic energy at a wavelength that is longer than that of red light. IR wireless is used for short and medium-range communications and security control. For IR communication to work, the systems mostly operate in *line-of-sight mode* which means that there must be no obstruction between the transmitter (source) and receiver (destination). Infrared is used in television remote controls and security systems.

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2. ***Broadcast Radio:*** Basically an audio broadcasting service, radio broadcasts sound through the air as radio waves. It uses a transmitter to transmit radio waves to a receiving antenna. To broadcast common programming, stations are linked to the radio networks. The broadcast occurs either in syndication or simulcast (simultaneous broadcast) or both. Radio broadcasting can also be done via cable FM, the internet and satellites. A radio broadcast sends data over long distances (across countries) at up to 2 megabits per second (AM/FM Radio).

3. ***Microwave Radio:*** Microwave transmission involves the transfer of voice and data through the atmosphere as super high-frequency radio waves called microwaves. Microwave transmission is mainly used to transmit messages between ground-based stations and satellite communications systems. Microwave transmission mainly uses radio waves whose wavelengths are conveniently measured in small units such as centimetres. Microwaves belong to the radio spectrum ranges of roughly 1.0 gigahertz (GHz) to 30 GHz.

4. ***Communications Satellites:*** A communication satellite is an artificial satellite used specifically as a communication transmitter/receiver in orbit. It behaves like a radio relay station above the earth to receive, amplify, and redirect analog and digital signals carried on a specific radio frequency.

Task Make distinction between microwave radio and broadcast radio.

Self Assessment

Fill in the blanks:

1. ..... is the transfer of information over a distance without the use of electrical conductors or wires.
2. ..... involves the transfer of voice and data through the atmosphere as super high-frequency radio waves called microwaves.
3. A ..... is an artificial satellite used specifically as a communication transmitter/receiver in orbit.

7.2 Cell Phone Services

Cellular systems provide two-way voice and data communication with regional, national, or international coverage. Cellular systems were initially designed for mobile terminals inside vehicles with antennas mounted on the vehicle roof. Today these systems have evolved to support lightweight handheld mobile terminals operating inside and outside buildings at both pedestrian and vehicle speeds.

The basic premise behind cellular system design is frequency reuse, which exploits the fact that signal power falls off with distance to reuse the same frequency spectrum at spatially-separated location.

Example: A cellular network is a mobile phone (cell phone) network.

"Mobile" wireless technologies provide voice and data communication services to mobile users who use cell phones, PDAs, etc.

Notes

The system is scalable, even though it has a finite number of channels. If channel demand increases in a specific area (such as a metro area), the service provider divides cells into a number of smaller cells. Transmitter power is turned down to fit the new smaller cell size and channel frequencies are allocated so that no adjoining cells use the same channels. However, channel reuse is possible in cells that are at least one cell apart. Thus, frequency reuse and smaller cell size allow the system to scale. Metro areas may have many small cells while rural area may have large cells. The cell size is designed to accommodate the number of people in the area.

When a user turns a phone on, its phone number and serial number are broadcast within the local cell. The base station picks up these signals and informs the switching office that the particular device is located within its area. This information is recorded by the switching office for future reference. An actual call takes place when the user enters a phone number and hits the Send button. The cellular system selects a channel for the user to use during the duration of the call.

As users travel, they may move from one cell to another, necessitating a handoff and the selection of a new channel. While in the vicinity of a cell, mobile phone users are under the control of the transmitter/receiver in that cell. A handoff takes place when the base station in one cell transfers control for a user's call to a base station in another cell. When a base station begins to lose a user's signal, it notifies base stations in all the surrounding cells that the user may be moving into their cells. As the user moves into a new cell, the base station in that cell takes over the call.

Notes The frequency of the call is changed to a frequency used in the new cell during the transition. This is because adjoining cells cannot use the same frequencies.

7.2.1 From Analog to Digital Systems

Mobile wireless analog communication systems have been around since the 1950s. The early systems were single channel "over-and-out" systems. Instead of a cellular configuration, a single radio tower serviced a metropolitan area, which severely limited the scalability of the systems. Service quality varied depending on the location of the caller. Later systems added multiple two-way channels but still had limited capacity.

Analog *cellular* services were introduced by AT&T in the 1970s and became widespread in the 1980s. The primary analog service in the United States is called AMPS (Advanced Mobile Phone Service). There are similar systems around the world that go by different names. The equivalent system in England is called TACS (Total Access Communications System).

The AMPS system is a circuit-oriented communication system that operates in the 824-MHz to 894-MHz frequency range. This range is divided into a pool of 832 full-duplex channel pairs (1 send, 1 receive). Any one of these channels may be assigned to a user. A channel is like physical circuit, except that it occupies a specific radiofrequency range and has a bandwidth of 30 kHz. The circuit remains dedicated to a subscriber call until it is disconnected, even if voice or data is not being transmitted.

Cellular systems are described in multiple generations, with third- and fourth- generation (3G and 4G) systems just emerging:

- ***1G systems*** These are the *analog* systems such as AMPS that grew rapidly in the 1980s and are still available today. Many metropolitan areas have a mix of 1G and 2G systems, as well as emerging 3G systems. The systems use frequency division multiplexing to divide the bandwidth into specific frequencies that are assigned to individual calls.

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- ***2G systems:*** These second-generation systems are *digital*, and use either TDMA (Time Division Multiple Access) or CDMA (Code Division Multiple Access) access methods. The European GSM (Global System for Mobile communications) is a 2G digital system with its own TDMA access methods. The 2G digital services began appearing in the late 1980s, providing expanded capacity and unique services such as caller ID, call forwarding, and short messaging. A critical feature was seamless roaming, which lets subscribers move across provider boundaries.
- ***3G systems:*** 3G has become an umbrella term to describe cellular data communications with a target data rate of 2 Mbits/sec. The ITU originally attempted to define 3G in its IMT-2000 (International Mobile Communications-2000) specification, which specified global wireless frequency ranges, data rates, and availability dates. However, a global standard was difficult to implement due to different frequency allocations around the world and conflicting input. So, three operating modes were specified. According to Nokia, a 3G device will be a personal, mobile, multimedia communications device that supports speech, colour pictures, and video, and various kinds of information content. There is some doubt that 3G systems will ever be able to deliver the bandwidth to support these features because bandwidth is shared. However, 3G systems will certainly support more phone calls per cell.
- ***4G Systems:*** On the horizon are 4G systems that may become available even before 3G matures (3G is a confusing mix of standards). While 3G is important in boosting the number of wireless calls, 4G will offer true high-speed data services. 4G data rates will be in the 2-Mbit/sec to 156-Mbit/sec range, and possibly higher. 4G will also fully support IP. High data rates are due to advances in signal processors, new modulation techniques, and smart antennas that can focus signals directly at users. OFDM (orthogonal frequency division multiplexing) is one scheme that can provide very high wireless data rates.

The move to digital technologies opened up the wireless world. It improved capacity, reduced equipment costs, and allowed for the addition of new features. Reduced handset costs meant more people were vying for services and taxing systems.

Did u know? 3G systems add more capacity. In addition, packet technologies were developed that use bandwidth more efficiently.

When digital cellular services were being designed in the early 1980s, the choice was to design a system that was backward compatible with existing analog systems (and used the same frequency allocation) or to design a whole new system. The European community had about seven incompatible analog services, so it created the GSM system from scratch to operate in the 900-MHz range (and later in the 1,800 MHz range).

Self Assessment

Fill in the blanks:

4. ..... were initially designed for mobile terminals inside vehicles with antennas mounted on the vehicle roof.
5. "Mobile" wireless technologies provide voice and data ..... services to mobile users who use cell phones, PDAs, etc.
6. The ..... system is a circuit-oriented communication system that operates in the 824 MHz to 894 MHz frequency range.

Notes

7. ..... systems use frequency division multiplexing to divide the bandwidth into specific frequencies that are assigned to individual calls.

8. ..... systems are *digital*, and use either TDMA (Time Division Multiple Access) or CDMA (Code Division Multiple Access) access methods.

7.3 Wi-Fi

Wi-Fi, developed on IEEE 802.11 standards, is widely used technology advancement in wireless communication. As the name indicates, WI-FI provides wireless access to applications and data across a radio network. WI-FI sets up numerous ways to build up a connection between the transmitter and the receiver such as DSSS, FHSS, IR–Infrared and OFDM.

The development on WI-FI technology began in 1997 when the Institute of Electrical and Electronic Engineers (IEEE) introduced the 802.11 technology that carried higher capacities of data across the network. This greatly interested some of major brands across the globe such as the world famous Cisco Systems or 3COM. Initially, the price of Wi-Fi was very high but around in 2002, the IT market witnessed the arrival of a break through product that worked under the new 802.11g standards. In 2003, IEEE sanctioned the standard and the world saw the creation of affordable Wi-Fi for the masses.

Wi-Fi provides its users with the liberty of connecting to the Internet from any place such as their home, office or a public place without the hassles of plugging in the wires. Wi-Fi is quicker than the conventional modem for accessing information over a large network. With the help of different amplifiers, the users can easily change their location without disruption in their network access. Wi-Fi devices are compliant with each other to grant efficient access of information to the user. Wi-Fi location where the users can connect to the wireless network is called a Wi-Fi hotspot.

Example: There are many wi-fi hotspots available to the public today, including airports, hotels, Starbucks, Panera Bread, and other free wi-fi hotspots.

Through the Wi-Fi hotspot, the users can even enhance their home business, as accessing information through Wi-Fi is simple. Accessing a wireless network through a hotspot in some cases is cost-free while in some it may carry additional charges. Many standard Wi-Fi devices make the Wi-Fi experience convenient and pleasurable for the users.

Example: Standard Wi-Fi devices are PCI, miniPCI, USB, Cardbus and PC card, ExpressCard

Distance from a wireless network can lessen the signal strength to quite an extent; some devices such as Ermanno Pietrosemoli and EsLaRed of Venezuela Distance are used for amplifying the signal strength of the network. These devices create an embedded system that corresponds with any other node on the Internet.

The market is flooded with various Wi-Fi software tools. Each of these tools is specifically designed for different types of networks, operating systems and usage type. For accessing multiple network platforms, Aircrack-ng is by far the best amongst its counterparts. The preferred Wi-Fi software tools list for Windows users is: KNSGEM II, NetStumbler, OmniPeek, Stumbverter, Wi-Fi Hopper, APTools. Unix users should pick any of the following: Aircrack, Aircrack-ptw, AirSnort, CoWPAtty, Karma. Whereas, Mac users are presented with these options: MacStumble, KisMAC, Kismet. It is imperative for users to pick out a Wi-Fi software tool that is compatible with their computer and its dynamics.

Wi-Fi uses radio networks to transmit data between its nodes. Such networks are made up of cells that provide coverage across the network. The more the number of cells, the greater and

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stronger is the coverage on the radio network. The radio technology is a complete package deal as it offers a safe and consistent connectivity. Radio bands such as 2.4 GHz and 5 GHz depend on wireless hardware such as Ethernet protocol and CSMA. Initially, Phase Shift Keying (PSK), a modulation method for conveying data was used, however now it has been replaced with CCK.

Caselet

Airtel Launches Wi-Fi Services in Mumbai 'Hot-spots'

Airtel has launched wireless fidelity services in eight 'hot spots' in Mumbai that include the Bombay Gymkhana, Café Mocha (coffee shop) outlets, Cha Bar at Oxford Bookstores and some other well-known city restaurants.

The company is planning 12 more wi-fi zones in the city by the end of the current month, said a news release from Airtel, mostly at airport lounges and hotel lobbies.

Wi-Fi launches by the company will follow in cities such as Delhi and Bangalore.

"With Mumbai being the financial capital of the country, complemented by a sizeable population of international visitors, the launch of the Airtel wi-fi service is all set to significantly enhance the productivity of our customer while enabling them to be online while on the move," said Mr Jayant Khosla, CEO, Bharti Cellular, Mumbai circle.

Source: http://www.thehindubusinessline.in/2004/10/05/stories/2004100502521700.htm

7.3.1 Features of "Wi-Fi" Technology

Wi-Fi has brought a new aspect in the ground of networking. The broadcast of data is completed via radio waves and the cost of cables for network lying down. Wi-Fi enables a user to get access to internet anywhere in the given location. Now you can make a network in Hotels, Libraries, colleges, universities, campus, private institutes, and coffee shops and even on a public place to make your business more profitable and connect with their client any time. Wi-Fi makes waves for business with their highly effective cable less media.

- ***Unmatched mobility and elasticity:*** Wi-Fi, is allowing new intensity of connectivity without giving up functions. Wi-Fi introduced various types of utilities such music streamers that transmit your music to speakers without any wire you can also play music from the remote computer or any other attached to the network. The most important now you can play online radio. Wifi technology system is rather remarkable, you can download songs, send email and transfer files expediently at sky-scraping speed and you can move your computer easily because your Wi-Fi network has no cable to disrupt your work so we can say that it is quite easy, helpful and most of all expedient.
- ***Support an entire age bracket:*** Wi-Fi technology has several advantages it support an entire age bracket and create a connection between components on the same network and have ability to transfer data between the devices and enable different kind of devices such as game, MP3 player, PDA's and much more!
- ***It's convenient and everywhere:*** Wi-Fi is a convenient technology and where the range station exists you are online during travel you can equip with a Wi-Fi network and set up shop anyplace. You will automatically connect with internet if you are near hotspot. These days Wi-Fi exist everywhere with all its wonders.
- ***More faster and secure:*** With Wi-Fi you can get high speed of internet because it is very fast than DSL and Cable connection you can establish a Wifi network in small space now you

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don't need any professional installation just connect to a power outlet with an Ethernet cord, and start browsing. Wi-Fi security system for Threats makes it more renewable and its tool protect your VPN and secure web page. You can easily configure the device to take better performance. The standard devices, embedded systems and network security make it more powerful.

- ***Wi-Fi with no limitation:*** You can use a "Wi-Fi" network with no limitation because it can connect you worldwide. You can easily reach to your requirements with Wi-Fi networking applications because the power consumption is very high as compared to other bandwidth. The vision of wireless network is bright with Pre-N products and high quality media streaming.

7.3.2 Wi-Fi Limitations

Wi-Fi technology supports two types, one is called "infrastructure" other one is "Ad hoc". In ad hoc Wi-Fi network can be connected without central device known as router or access point. Ad hoc mode is always preferred over infrastructure mode, however ad hoc networks have following issues. Wi-Fi devices configure on Ad hoc mode offers nominal security against network intruders. Ad hock Wi-Fi configured devices cannot disable SSID broadcast in contrast to infrastructure mode. Network attackers will not required much of effort to prevail in Ad hoc Network.

Using Ad hoc mode signals issues can experienced where as using alternative infrastructure mode will provide full strength singles. Wi-Fi networking standard including 802.11g requires ad hoc mode of communication supports which 11Mbps bandwidth. Wi-Fi devices when configured to infrastructure mode can transfer data up to 54 Mbps, where as using ad hoc mode only 11 mbps can be achieved. Ad hoc mode is considered slower in comparison to infrastructure for this reason. The following are some of the limitations of Wi-Fi:

- ***Security concerns:*** It is simple to set Wi-Fi network but keeping it secure takes much more effort, Access points of Wi-Fi do not deploy encryption methods. It is required to be done as network is enabled. Secure Wi-Fi network can be easily attacked by hackers to steal private information. Guests who are not potentially harmful can still utilise the network resources and minimise the performance.
- ***Interference from other devices:*** Wi-Fi transmits data at 2.4 GHz making susceptible to interfere Bluetooth enabled devices, mobile phones, cordless, Microwaves and other communication devices, closer the interfering devices are the poor communication will be and vice versa.
- ***Lacking high-quality media streaming:*** Today's fastest Wi-Fi standards are pushed beyond their limit when trying to view high end media. High definition video and audios cannot be viewed flawlessly because of lower transfer rate; things can be much more worst if other clients are accessing the same access points.

Even the fastest current Wi-Fi standards are pushed beyond their limit when trying to handle some of today's high-end media. High-definition audio and video files are timely-delivery-intensive, and typical wireless networks have neither the transfer speeds nor the consistency to transfer them flawlessly. This problem is further compounded if there are multiple devices connected to the same because the bandwidth must be divided between all of the equipment.

Task Make distinction between "Infrastructure" and "Ad-hoc".

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Self Assessment

Fill in the blanks:

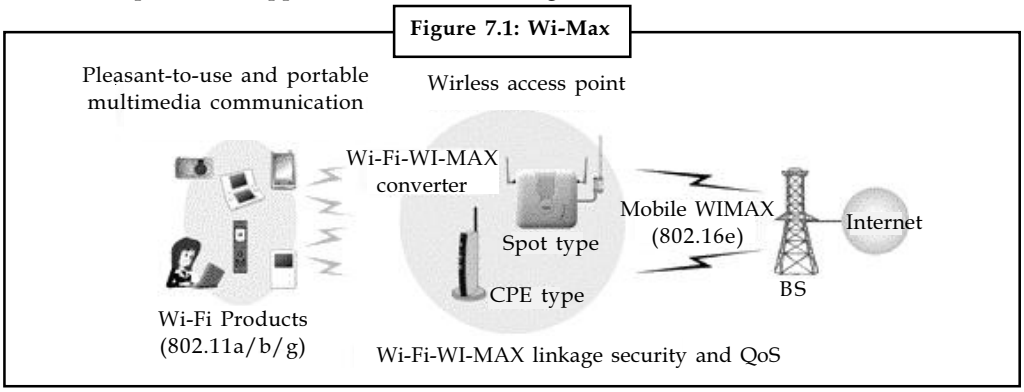
9. ..... devices are compliant with each other to grant efficient access of information to the user.
10. Wi-Fi location where the users can connect to the wireless network is called a .....
11. In ..... Wi-Fi network can be connected without central device known as router or access point.

7.4 Wi-Max

Wi-Max stands for Worldwide Interoperability for Microwave Access. **Wi-Max technology** is a telecommunications technology that offers transmission of wireless data via a number of transmission methods; such as portable or fully mobile internet access via point to multipoints links. The **Wi-Max technology** offers around 72 Mega Bits per second without any need for the cable infrastructure. **Wi-Max technology** is based on Standard that is **IEEE 802.16**, it usually also called as Broadband Wireless Access. Wi-MAX Forum created the name for **Wi-Max technology** that was formed in Mid June 2001 to encourage compliance and interoperability of the **Wi-Max IEEE 802.16 standard**. Wi-Max technology is actually based on the standards that making the possibility to delivery last mile broadband access as a substitute to conventional cable and DSL lines.

Wi-Max (802.16) technology often misinterpreted by the people by the names of mobile Wi-MAX, 802.16d, fixed Wi-MAX and **802.16**e. Actually 802.16-2004 or 802.16d is developed by the third party as a standard and it is also referred to as **Fixed Wi-MAX** because this standard is lacking behind just because of the non-mobility feature that's why it's often called as **Fixed Wi-MAX**. During the maturity period of Wi-Max (802.16) technology some of the amendments were made to the above mentioned 802.16d and they referred this amending standard as 802.16e. 802.16e introduced mobility and some other features amongst other standards and is also known as **Mobile Wi-MAX**. Mobile Wi-MAX takes the fixed wireless application a step further and enables cell phone-like applications on a much larger scale.

Figure 7.1: Wi-Max



Source: http://freewimaxinfo.com/wi-max-technology.html

Example: Mobile Wi-MAX enables streaming video to be broadcast from a speeding police or other emergency vehicle at over 70 MPH. It potentially replaces cell phones and mobile data offerings from cell phone operators such as EvDo, EvDv and HSDPA.

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Less than one out of five people of the developed world and an even smaller, little percentage of people across the world have broadband access today. Existing technologies such as Digital Subscriber Line (DSL), cable, and fixed wireless are overwhelmed by expensive installs, problems with loop lengths, upstream upgrade issues, line-of-sight restrictions, and poor scalability.

Wi-Max (802.16) is the next stage to a broadband as well as a wireless world, extending broadband wireless access to new locations and over longer distances, as well as considerably reducing the cost of bringing broadband to new areas. Wi-Max (802.16) technology offers greater range and bandwidth than the other available or forthcoming broadband wireless technologies such as Wireless Fidelity (Wi-Fi) and Ultra-wideband (UWB) family of standards. It provides a wireless alternative to wired backhaul and last mile deployments that use Data Over Cable Service Interface Specification (DOGS1S) cable modems, Digital Subscriber Line technologies (DSL), T-carrier and E-carrier (Tx/Ex) systems, and Optical Carrier Level (OC-x) technologies.

The general initiative of metropolitan area wireless networking, as envisioned with 802.16, begins with what is called fixed wireless. A backbone of base stations is connected to a public network, and each base station carries hundreds of fixed subscriber stations, which can be both public hot spots and fire-walled enterprise networks. Later in the development cycle of 802.16e, Wi-Max (802.16) is expected to encourage mobile wireless technology specifically wireless transmissions directly to mobile end users, This will be similar in function to the General Packet Radio Service (GPRS) and the one times Radio Transmission Technology (RTT) offered by mobile phone companies.

New organisations as well as individuals are increasingly adopting broadband, whereas those already using broadband are becoming dependent on it and are demanding better services with added benefits. To support this exceptional new demand, Wi-Max (802.16) has emerged as a feasible solution, because of its inherent features that holds great promise for the future of wireless communications.

Notes There has been a lot of excitement about Wi-Max (802.16) and the impact that the standards based wireless network technology will have on the broadband access market. All this hype has generated great expectations, and the industry has responded with exceptional aggression and commitment toward taking broadband to the next level with Wi-Max (802.16).

Did u know? Wi-Max technology can operate on both licensed and non-licensed frequencies.

7.4.1 Advantages of Wi-Max

Wi-Max stands for Worldwide Interoperability for Microwave Access services brings long time term evolution in wireless data market. WiMax Technology is facing many hurdles in market while it has some great advantages which make it a technology of today. The advantages of Wi-Max Technology are discussed in details below:

- ***Wi-Max Coverage:*** The single station of Wi-Max can operate and provide coverage for hundred of users at a time and manage sending and receiving of data at very high speed with full of network security.
- ***Wi-Max High Speed:*** The High speed of connectivity over long distance and high speed voice makes it more demanded in hardly populated areas plus compacted areas.
- ***Multi-functionality within Wi-Max Technology:*** Wi-Max Technology perform a variety of task at a time such as offering high speed internet, providing telephone service, transformation of data, video streaming, voice application etc.

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- ***Potential and Development:*** Wi-Max Technology is a great invention for new Era because Wi-Max has enough potential for developing and opportunity to offer various types of services for new generation. Now you can connect internet anywhere and browse any site and make possible online conference with mobile internet, multimedia application never let you bored, IPTV stay you up to date etc.
- ***Stay in Touch with End User:*** Wi-Max network always keep stay in touch with your friends and all others using same Wi-Max network because it provide absolute communication service to the end users to make possible rich communications.
- ***Wi-Max Infrastructure:*** Wi-Max infrastructure is very easy and flexible therefore it provides maximum reliability of network and consent to actual access to end users.
- ***Wi-Max, cheap network:*** Wi-Max is a well known wireless network now days because it provides a low cost network substitute to internet services offered via ADSL, modem or local area network.
- ***Wi-Max Rich Features:*** Wi-Max Technology is offering rich features which make it useful. Wi-Max offers separate voice and data channel for fun, the semantic connection make your network more secure then before, fast connectively, license spectrum, liberty of movement etc.
- ***Wi-Max and Wifi:*** The Wi-Max network provides much higher speed and very long range as compared to Wi-Fi Technology.
- ***Smart Antenna and Mesh Topology:*** The use of smart antenna in Wi-Max network offering high quality widest array which enable you to make possible communication on long route without any encryption. It offers 2.3, 2.7, 3.3, 3.8 GHz frequency ranges. The use of Mesh topology in Wi-Max network for the expansion is an extensive spectrum of antennas for commercial as well as for residential users.
- ***Ultra wide Band:*** The unique and excellent infrastructure of Wi-Max is offering Ultra-Wideband. Its exclusive design is providing range from 2 to 10 GHz and outstanding time response.
- ***Homeland Security:*** Security options of Wi-Max Technology also offer very high security because of encryption system used by Wi-Max. The Wi-Max is providing exclusive homeland security. Now you can exchange your data on whole network without any fear of losing data.
- ***Lack of History:*** The best advantage of Wi-Max vendor technology is lack of history within mobile industry for protection. Wi-Max push the existing technologies and forward on steady stream. Only Wi-Max technology offers first major mobile standard to all mobile broadband infrastructures. It is a foremost mobile transporter. Wi-MAX technology support both wireless and wired network including cable operator which are now successful due to core networks of Wi-Max.

In short, Wi-Max has great advantages such as it has ability to perform an exclusive list of services over a single station. Wi-Max decrease in operating and capital expenditure. The development of application is often a competitive edge.

7.4.2 Disadvantages of Wi-Max

Wi-Max technology was designed to compete with remote locations that presently employs satellite for internet connectivity. Wi-Max Technology is powerful mobile technology but is facing some disadvantages discussed below.

- ***Lack of Quality:*** The Wi-Max network has lack of quality service because there are hundreds of people trying to get access at the same tower so due to heavy traffic it is very hard to maintain high quality.

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- ***Wi-Max range:*** The other disadvantage of Wi-Max network is range. As Wi-Max offer 70Mbps in range with moving station but in practice it is quite different because it is possible only in specify or ideal circumstances. If a user staying away from the specified environment then speed can drop considerably.
- ***Wi-Max Bandwidth:*** Like other network Bandwidth is collective amongst clients in a specified zone. But if there are a lot of users in one area the speed decreases which may be 2 to 10 Mbps of shared bandwidth.
- ***Expensive network:*** The most disadvantage of Wi-Max is its installation and operational cost. Due to heavy structure, tower, antennas, etc. makes the Wi-Max network collectively high cost network.
- ***Bad Weather:*** The quality of services decreases in rainy season because the weather condition could interrupt the signal which may cause of bad signal and broadcasting may be stop or interrupted.
- ***Wireless equipments:*** If you are trying to use much wireless equipment at a time within Wi-Max network then these equipments may cause interference and could interfere with your broadcasting data or face some compromised speed.
- ***Power consuming:*** Wi-Max network is very heavy in structure therefore need much electrical support for running the overall network.
- ***Data Rate:*** The data rate of Wi-Max as compared to other network such as fibre optics, satellite, cables, etc. are very slow.

Self Assessment

Fill in the blanks:

12. Wi-Max stands for .....
13. The Wi-Max technology offers around ..... per second without any need for the cable infrastructure.
14. ..... Wi-MAX takes the fixed wireless application a step further and enables cell phone-like applications on a much larger scale.
15. The general initiative of metropolitan area wireless networking, as envisioned with 802.16, begins with what is called .....

Case Study

Dharamsala Community Wireless Mesh Network

The Dharamsala Wireless-Mesh Community Network came to life in February 2005, following the deregulation of Wi-Fi for outdoor use in India. By the end of February 2005, the mesh had already connected 8 campuses. Extensive testing during February of 2005 showed that the hard mountainous terrain is most suitable for mesh networking, as conventional point-to multipoint networks, cannot overcome the line-of-sight limitations presented by the mountains. mesh topology also offered much larger area coverage, while the "self healing" nature of mesh routing, proved to be essential in places where electricity supply is very erratic at best.

Contd....

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The mesh backbone includes over 30 nodes, all sharing a single radio channel. Broadband Internet services are provided to all mesh members. The total upstream Internet bandwidth available is 6 Mbps. There are over 2,000 computers connected to the mesh, the broadband internet connection is putting the mesh under great load. At present, the system seems to handle the load without any increase in latency or packet-loss. It is clear that scalability will become an issue if we continue to use a single radio channel. To solve this problem, new mesh routers with multiple radio channel support are being developed and tested in Dharamsala, with an emphasis on products that meet our technical requirements and our economically viable. The initial results are very promising.

The mesh network is based on recurring deployments of a hardware device, which is designed and built locally – known as the Himalayan-Mesh-Router. The same mesh-routers are installed at every location, with only different antennas, depending on the geographical locations and needs. We use a wide range of antennas, from 8 - 11 dBi omni-directional, to 12 - 24 dBi directional antennas and occasionally some high gain (and cost) sector antennas.

The mesh is primarily used for:

1. Internet access
2. File-sharing applications
3. Off-site backups
4. Playback of high quality video from remote archives.

A central VoIP, software-based PBX is installed (Asterisk) and it provides advanced telephony services to members. The Asterisk PBX is also interfacing the PSTN telephone network. However, due to legal issues it is presently used only for incoming calls into the mesh. Subscribers use a large variety of software-phones, as well as numerous ATAs (Analog Telephone Adaptors) and full-featured IP phones.

The encrypted mesh back-bone does not allow access to roaming mobile devices (notebooks and PDAs), so we have placed multiple 802.11b access points at many of the same locations where mesh-routers are installed. The mesh provides the backbone infrastructure while these APs provide access to mobile roaming devices, where needed.

Access to the mesh backbone is only possible by mesh-routers. Simple wireless clients lack the intelligence needed to "speak" the mesh routing protocols and strict access policies. The mesh channel is therefore encrypted (WPA), and also "hidden" to prevent mobile devices from funding it or attempting to access it. Allowing access to the mesh only by mesh-routers allows for strict access control policies and limitations to be enforced at the Client Premises Equipment (CPE) which is a crucial element needed to achieve end-to-end security, traffic-shaping, and quality-of-service.

Power consumption of the mesh-Router is less than 4 Watts. This makes them ideal for using with solar panels. Many of the Dharamsala Mesh routers are powered solely by small solar panels. The use of solar power in combination with small antennas and low power routers is ideally suitable for disaster areas, as it very likely to survive when all other communication infrastructure is damaged.

Questions

1. Discuss the results produced by extensive testing (for mesh networking) done during February of 2005.
2. What is the use of mesh network? Discuss.

Source: http://wndw.net/pdf/wndw2-en/ch11-casestudies.pdf

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7.5 Summary

- Wireless communication is the transfer of information over a distance without the use of electrical conductors or wires.
- Wireless communications encompasses various types of fixed, mobile, and portable two way radios, cellular telephones, Personal Digital Assistants (PDAs) and wireless networking.
- Cellular systems provide two-way voice and data communication with regional, national, or international coverage.
- Analog *cellular* services were introduced by AT&T in the 1970s and became widespread in the 1980s. The primary analog service in the United States is called AMPS (Advanced Mobile Phone Service).
- Wi-Fi, developed on IEEE 802.11 standards, is widely used technology advancement in wireless communication.
- Wi-Fi is quicker than the conventional modem for accessing information over a large network.
- Wi-Max technology is a telecommunications technology that offers transmission of wireless data via a number of transmission methods; such as portable or fully mobile internet access via point-to multipoints links.
- Wi-Max (802.16) technology often misinterpreted by the people by the names of mobile Wi-MAX, 802.16d, fixed Wi-MAX and 802.16e.

7.6 Keywords

Communication Satellite: A communication satellite is an artificial satellite used specifically as a communication transmitter/receiver in orbit.

Fixed Wi-Max: The fixed wi-max serves the stationary and pedestrian classes.

IR Wireless Communication: IR wireless communication communicates data or information in devices or systems through infrared (IR) radiation.

Microwave Transmission: Microwave transmission involves the transfer of voice and data through the atmosphere as super high-frequency radio waves called microwaves.

Mobile Wi-Max: A mobile wi-max network access system is one that can address the vehicular class.

Wi-Fi: "Wi-Fi" is a type of wireless networking protocol that allows devices to communicate without cords or cables.

Wi-Max: Wi-Max is based on IEEE 802.16 standards which is a telecommunications technology that offers transmission of wireless data via a number of transmission methods.

Wireless Communication: Wireless communication is the transfer of information over a distance without the use of electrical conductors or wires.

7.7 Review Questions

1. Explain the concept of wireless communication with examples. Also discuss the different types of wireless communication.
2. Describe the use of cell phone services in wireless communication.

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3. What is Wi-Fi? Explain the concept of Wi-Fi with examples.
4. Discuss the features and limitations of Wi-Fi.
5. How Wi-Max technology provides transmission of wireless data? Enlighten.
6. What are the advantages and disadvantages of wireless technologies? Discuss.
7. Make distinction between Wi-Fi and Wi-Max.
8. Describe the various generations that are described in cellular systems.
9. Make distinction between Fixed Wi-MAX and Mobile WiMax.
10. Elucidate the concept of advanced mobile phone service.

Answers: Self Assessment

1. Wireless communication
2. Microwave transmission
3. communication satellite
4. Cellular systems
5. Communication
6. AMPS (Advanced Mobile Phone Service)
7. 1G
8. 2G
9. Wi-Fi
10. Wi-Fi hotspot
11. ad hoc
12. Worldwide Interoperability for Microwave Access
13. 72 Mega Bits
14. Mobile
15. fixed wireless

7.8 Further Readings

Books

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Online links

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http://modeling.asu.edu/modeling/DavidsMark_cellPhone-TPT10.pdf

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Unit 8: e-Business

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8.5 Summary
8.6 Keywords
8.7 Review Questions
8.8 Further Readings

Objectives

After studying this unit, you should be able to:

- Identify the need of e-business
- Discuss B2B, B2C, and C2C e-business
- Identify e-governance applications
- Discuss the advantages of e-business
- Recognise issues with e-business

Introduction

Electronic business, or e-business, is the phenomenon that is simultaneously legitimising the Internet as a mainstream communications medium and revolutionising a new commercial business reality. e-Business is a term used to describe businesses run on the Internet, or utilising Internet technologies to improve the productivity or profitability of a business. In a more general sense, the term may be used to describe any form of electronic business that is to say, any business which utilises a computer. This usage is somewhat archaic, however, and in most contexts e-business refers exclusively to Internet businesses. The most common implementation of e-business is as an additional, or in some cases primary, storefront. By selling products and services online, an e-business is able to reach a much wider consumer base than any traditional brick-and-mortar store could ever hope for. This function of e-business is referred to as e-commerce, and the terms are occasionally used interchangeably.

8.1 Concept of e-Business

e-Business presents a broader dimension of e-commerce as it represents the use of electronic technology, especially web and other network technology, for business. e-Business is more than

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just having a web presence to facilitate buying and selling. "e-Business is exploiting the combined power of the internet and information technology to fundamentally transform key business strategies and processes".

There are three categories of e-business involvement. The first type is what we're going to call an e-business enhanced organisation, a traditional organisation that sets up e-business capabilities, usually e-commerce, while maintaining its traditional structure. Many Fortune 500 type organisations are evolving into e-business using this approach. They use the Internet to enhance (not to replace) their traditional ways of doing business.

Example: Sears, a traditional bricks-and-mortar retailer with thousands of physical stores worldwide started an Internet division whose goal is to make Sears "the definitive online source for the home."

e-Business Represents

1. A range of online tools and processes that transform a company's value proposition by using sophisticated data warehousing to target customers more effectively, networks to link companies with suppliers, distributors and other business partners; and flexible organisational infrastructures that adapt to change.
2. A way for companies to participate as part of a larger networked community of providers, each bringing specialised skills and new levels of performance to an e-market place.

An e-business may use the Internet to acquire wholesale products or supplies for in-house production. This facet of e-business is sometimes referred to as e-procurement, and may offer businesses the opportunity to cut their costs dramatically. Even many e-businesses which operate without an electronic storefront now use e-procurement as a way to better track and manage their purchasing.

In addition to buying and selling products, e-business may also handle other traditional business aspects.

Example: The use of electronic chat as a form of technical and customer support is an excellent example of this.

An e-business which uses chat to supplement its traditional phone support finds a system which saves incredible amounts of time while providing opportunities unavailable through traditional support.

By using virtual computer systems, for example, technical support operators can remotely access a customer's computer and assist them in correcting a problem. And with the download of a small program, all pertinent information about the hardware and software specifications for a user's computer may be relayed to the support operator directly, without having to walk a customer through personally collecting the data.

Using email and private websites as a method for dispensing internal memos and white sheets is another use of the Internet by e-business. Rather than producing time-intensive and costly physical copies for each employee, a central server or email list can serve as an efficient method for distributing necessary information.

In the past few years, virtually all businesses have become, to some degree or another, an e-business. The pervasiveness of Internet technology, readily available solutions, and the repeatedly demonstrated benefits of electronic technology have made e-business the obvious path. This trend continues with new technologies, such as Internet-enabled cell phones and PDAs, and the trend of e-business saturation will most likely continue for some time.

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8.1.1 Need of e-Business

Business and technology are directly inextricably linked up. Nowadays, e-business is a good business concern, a real business. There are no technology conclusions that are not business concern decisions. Business actions is essential for incorporated punctual company information – as building better customer relationship management, supply chain management, and on the far side, they are essential as well for meeting the latest fast-changing business needs. e-business helping these processes are the process most business shortly will be transacted.

Whether or not you always plan to trade or sell products or services across the Web, your most important customer or provider might one day take a firm stand informed applying Web for altogether dealings.

The fastest growing companies are going sharply to add e-business into their operations. They adjust their arrangements or systems on their fast-changing business concern priorities and apply these systems strategically, for development.

In addition, successful businesses are applying information technology to collect and read data just about their eventual customers, including demographics, trends, and buying deportment.

By utilising e-business based e-commerce solutions, companies can:

- Improve margins by using a lower-cost online channel
- Reduce paper-based processes: postage, printing, and handling costs
- Through the use of electronic transfers/just-in-time payments reduce float
- Furnish customers faster, more responsive service

e-Commerce has garnered more attention than any aspect of e-business. The Web has had a remarkable impact on a wide number of industries with its remarkable ability to offer goods and services so conveniently. Over $750 million in airline tickets were sold over the Web last year and the brokerage industry now manages $200 billion worth of assets in online accounts.

The e-commerce process includes:

- Electronic presentation of goods and services
- Online order taking and bill presentment
- Automated customer account inquiries
- Online payment and transaction handling.

Here are some of the ways your company can implement an e-commerce strategy with e-Business in mind:

- Develop a database-driven online catalogue
- Provide online ordering by securely integrating front-end presentation with an order entry system
- Move static billing statement data to an interactive Web-based presentment server
- Accept electronic payment methods (credit cards, EFT, etc.) for full-transaction shopping or bill payment.

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8.1.2 Business-to-Business (B2B)

On the Internet, B2B (business-to-business), also known as e-biz, is the exchange of products, services, or information between businesses rather than between businesses and consumers. The business-to-business (B2B) group includes all applications intended to enable or improve relationships within firms and between two or more companies. In the past, this has largely been based on the use of private networks and Electronic Data Interchange (EDI). Although early interest centred on the growth of retailing on the Internet (sometimes called e-tailing), forecasts are that B2B revenue will far exceed business-to-consumers (B2C) revenue in the near future.

Example: The business-business category are the use of the Internet for searching product catalogues, ordering from suppliers, receiving invoices and making electronic payments. This category also includes collaborative design and engineering, and managing the logistics of supply and delivery.

B2B Web sites can be sorted into:

- ***Company Web sites***, since the target audience for many company Web sites is other companies and their employees. Company sites can be thought of as round-the-clock mini-trade exhibits. Sometimes a company Web site serves as the entrance to an exclusive extranet available only to customers or registered site users. Some company Web sites sell directly from the site, effectively e-tailing to other businesses.
- ***Product supply and procurement exchanges***, where a company purchasing agent can shop for supplies from vendors, request proposals, and, in some cases, bid to make a purchase at a desired price. Sometimes referred to as e-procurement sites, some serve a range of industries and others focus on a niche market.
- ***Specialised or vertical industry portals*** which provide a "subWeb" of information, product listings, discussion groups, and other features. These vertical portal sites have a broader purpose than the procurement sites (although they may also support buying and selling).
- ***Brokering sites*** that act as an intermediary between someone wanting a product or service and potential providers.

Example: Equipment leasing

- ***Information sites*** (sometimes known as info-mediary), which provide information about a particular industry for its companies and their employees. These include specialised search sites and trade and industry standards organisation sites.

Many B2B sites may seem to fall into more than one of these groups. Models for B2B sites are still evolving.

Another type of B2B enterprise is software for building B2B Web sites, including site building tools and templates, database, and methodologies as well as transaction software.

B2B is e-commerce between businesses.

Did u know? An earlier and much more limited kind of online B2B prior to the Internet was Electronic Data Interchange (EDI), which is still widely used.

Notes

Caselet

B2B Market to Touch ₹ 3,800 Crore

EstatsIndia, an Internet research and consultancy firm estimates that the business-to-business (B2B) e-commerce market is set to touch ₹ 13,550 crore at a CAGR of 52.63 per cent by the end of 2009. For the 2006-07 fiscal, the B2B market is likely to be ₹ 3,800 crore. Within the e-commerce market, the e-procurement segment would grow fastest at a CAGR of 50.93 per cent and cross ₹ 12,100 crore in the next two years.

Indiamart.com, a B2B online platform, has been forecast to increase its revenues from ₹ 9 crore in 2004-05 to ₹ 53 crore by 2007-08 and cross ₹ 125 crore by 2009-10. Whereas, Metaljunction.com and Agriwatch.com are slated to grow from ₹ 50 crore in 2004-05 to ₹ 920 crore and ₹ 7 crore in 2004-05 to ₹ 255 crore by 2009-10 respectively.

Similarly, 01markets.com, which earned revenues worth ₹ 85 crore in 2004-05 is likely to grow from the current ₹ 280 crore to ₹ 1,125 crore over the next three years against Indiamarkets.com, which is slated to grow from ₹ 800 crore in 2004-05 to ₹ 10,100 crore by 2009-10 and Commercejunction.com is expected to increase its revenues from ₹ 10 crore to ₹ 60 crore in the same period.

Source: http://www.thehindubusinessline.in/bline/2007/01/29/stories/2007012901300200.htm

8.1.3 Business-to-Customer (B2C)

B2C is abbreviated from "Business to Customer", which means the companies provide various kinds of merchandise for customers by online stores. Business-to-consumer (B2C) is an Internet and electronic commerce (e-commerce) model that denotes a financial transaction or online sale between a business and consumer. That is, B2C involves Interactions relating to the purchase and sale of goods and services between a business and consumer.

The business-to-consumer (B2C) group is a much newer area and largely equates to electronic retailing over the Internet. This category has expanded greatly in the late 1990s with the growth of public access to the Internet.

The business-to-consumer category includes electronic shopping, information searching (e.g. railway timetables) but also interactive games delivered over the Internet. Popular items purchased via electronic retailing are airline tickets, books, computers, videotapes, and music CDs.

Business to Consumer, describes the activities of businesses in selling products and/or services.

Example: Someone buying a television set from an electronics retailer would be a B2C transaction. The transaction preceding this, e.g. the purchase of components, screens, plastics etc. by the manufacturer, and the sale of the set from the manufacturer to the retailer would be B2B transactions.

Before the appearance of B2C e-business, people had to go outside to do shopping. However, the existing of online stores has brought more convenience for human beings! You can buy a suit of clothes without entering into any clothing shops; you can also get a lot of food and drinks with only several clicks on your computer mouse; and the like.

All in all, there's no doubt that B2C e-business is an efficient economic model. It saves much time for both the companies and the customers. Meanwhile, every coin has two sides. We should realise that there are some inevitable disadvantages of B2C e-business, such as credit fraud.

Notes

Caution When you choose to buy some commodities online, you should be as cautious as possible.

Task Make distinction between B2B and B2C.

8.1.4 Customer-to-Customer (C2C)

Customer to Customer (C2C), sometimes known as Consumer to Consumer, e-Commerce involves electronically-facilitated transactions between individuals, often through a third party.

Example: One common example is online auctions, such as Ebay, where an individual can list an item for sale and other individuals can bid to purchase it. Auction sites normally charge commission to the sellers using them. They act purely as intermediaries who match buyers with sellers and they have little control over the quality of the products being offered, although they do try to prevent the sale of illegal goods, such as pirate CDs or DVDs.

Another popular area for customer to customer transactions is online classified advertising sites, such as Craigslist and Gumtree.

Major online retailers like Amazon also allow individuals to sell products via their sites.

C2C is expected to increase in the future because it minimises the costs of using third parties. However, it does suffer from some problems, such as lack of quality control or payment guarantees and there can sometimes be difficulties in making credit-card payments.

Self Assessment

Fill in the blanks:

1. ..... is a term used to describe businesses run on the Internet, or utilising Internet technologies to improve the productivity or profitability of a business.
2. ..... also known as e-biz, is the exchange of products, services, or information between businesses.
3. ..... is an Internet and e-commerce model that denotes a financial transaction or online sale between a business and consumer.
4. ..... involves electronically-facilitated transactions between individuals, often through a third party.
5. The process of using Internet in order to acquire wholesale products or supplies for in-house production is known as .....
6. ..... act as an intermediary between someone wanting a product or service and potential providers.

8.2 e-Governance Applications

E-governance is the use of a range of modern Information and Communication Technologies (ICT) such as Internet, Local Area Networks, mobiles, etc. by Government to improve the effectiveness, efficiency, service delivery and to promote democracy.

Notes

In practice, "e-governance" has several meanings. One narrow definition focuses only on Internet-applications inside government. This narrow definition sometimes is expanded to include the use of the Internet in restructuring government-citizen interactions and related political relationships. Another narrow view relates to e-government as the public sector equivalent of e-commerce and government citizen transactions.

To bridge the gap between government and citizens, to provide effective and efficient services, to increase productivity and to extend other benefits to its citizens, the governments of various countries introduced e-Governance applications. The applications employ information technology, telecommunication network incorporating government policies over internet to serve the citizens better.

The major fields of e-Governance applications are Government to Citizens (G2C), Government to Business (G2B) and Government to Government (G2G), and Intra-government.

Notes The citizens are the power of nation and their satisfaction is ultimate. The government services to citizens should be given utmost importance, as and when it fails resulting in citizen unrest.

The four specific areas of e-governance are discussed as below:

- ***Government to citizen:*** e-Government facilitates processes for citizens to communicate with government and exchange information, access government services and benefits, and interact with regulatory and licensing agencies; ICT establishes multiple channels and enables citizens' remote and distributed access to government and government processes overall
- ***Government to business:*** e-Government eases business' access to the bureaucratic and regulatory processes of government, as subjects of government or as vendors, lowering transaction costs, shortening time involved, and increasing efficiency, on both sides of the transaction
- ***Government to government:*** Transactions within government relate to the transactions between the many units of government at national, regional and local levels, as well as transactions with foreign governments; electronic communication tools can allow government entities to communication more quickly and effective and more easily share resources and information and data, through faster, more efficient, more effective processes.
- ***Intra-government:*** ICT can improve the relationships and processes within individual government entities; ICT can improve the way government does its basic business, managing processes more effectively and efficiently through electronic best practices; ICT has direct applications in processes such as human resource management and information and knowledge management.

Self Assessment

Fill in the blanks:

7. E-governance is the use of a range of modern ..... by Government to improve the effectiveness, efficiency, service delivery and to promote democracy.
8. The ..... applications employ information technology, telecommunication network incorporating government policies over internet to serve the citizens better.

Notes

9. Transactions between ..... relate to the transactions between the many units of government at national, regional and local levels.

8.3 Advantages of e-Business

Various advantage**s** of e-business are discussed below:

- ***Worldwide Presence:*** This is the biggest advantage of conducting business online. A firm engaging in e-business can have a nationwide or a worldwide presence. IBM was one of the first companies to use the term e-business to refer to servicing customers and collaborating with business partners from all over the world. Dell Inc., too, had a flourishing business selling PCs throughout the U.S., only via telephone and the Internet till the year 2007. Amazon.com is another success story that helps people buy internationally from third parties. Hence, worldwide presence is ensured, if companies rethink their business with regard to the Internet.
- ***Cost-effective Marketing and Promotions:*** Using the web to market products guarantees worldwide reach at a nominal price. Advertising techniques, like pay per click advertising, ensure that the advertiser only pays for the advertisements that are actually viewed. Affiliate marketing has emerged on account of e-business. Affiliate marketing has helped both the business and the affiliates. Firms have managed to use cost-effective online advertising strategies to their advantage.

Did u know? In affiliate marketing, customers are directed to a business portal because of the efforts of the affiliate, who in turn receive a compensation for their efforts meeting with success.

- ***Developing a Competitive Strategy:*** Firms need to have a competitive strategy in order to ensure a competitive advantage. Without an effective strategy, they will find it impossible to maintain the advantage and earn profits. The strategy that the firms can pursue can be a cost strategy or a differentiation strategy.

Example: Till the year 2007, Dell Inc. was selling computers only via the Internet and the phone. It adopted a differentiation strategy by selling its computers online and customising its laptops to suit the requirements of the clients. Thus, e-business resulted in Dell Inc. managing to capture a chunky segment of the market using the differentiation strategy.

- ***Better Customer Service:*** E-business has resulted in improved customer service. Many a time, on visiting a website, the customer is greeted by a pop-up chat window. Readily available customer service may help in encouraging the customer to know more about the product or service. Moreover, payments can be made online, and products can be shipped to the customer without the customer having to leave the house.
- ***Curtailing of Transaction Cost:*** The nature of online business is such that, the costs incurred for every transaction to go through smooth and sound, there is no acting middleman. Websites are sufficiently loaded with directions to facilitate stress-free transactions. Simple and succinct instructional tabs, generally, save the potential buyer from predicaments of any sort. The mode of payment is predetermined, promising security to the customer. Thus, online payments are a no-ho-hum affair. All that you are left with, as the proprietor of your online business, is to download the requirement order and ship it. This demands effort, too; however, the toil is far less than a tangible business profile.

- ***Overhead Costs Are Reduced:*** An E-business, essentially, is independent of costs that are incurred due to business having a physical entity. Utility bills and other expenses are manageable. You also cut back on costs incurred for hiring personnel and retaining them with competitive incentives topped with abundant facilities. Running an e-business is highly convenient as the proprietor does not require need to rent another site to execute the business.

Task How does e-business help in improving customer service?

Self Assessment

State whether the following statements are true or false:

10. Firms still use expensive online advertising strategies to their advantage.
11. Firms need to have a competitive strategy in order to ensure a competitive advantage.
12. Readily available customer service may help in encouraging the customer to know more about the product or service.

8.4 Issues with e-Business

A growing number of companies use computers and the Internet in their daily business. It is therefore not surprising that e-business is an important if not significant part of their business strategy.

For more information on how you can use e-business as a part of your business strategy, let us discuss the following issues.

- ***E-marketplace development:*** Back in 1999-2000, the hype surrounding e-markets was immense and an average of three new e-marketplaces was being launched every day. Globally, the number of e-marketplaces for businesses is extensive. This makes it difficult to identify those e-markets that are most significant. Companies interested in international trade should be aware that e-marketplaces are potential sources of new customers, and access routes to global supply chains. eMarket Services has compiled a list of 52 significant e-marketplaces in 17 industries based on two main criteria; the e-markets are well known globally in their industries and they have significant global traffic.
- ***Strategic Issues:*** An organisation's strategic planning process for e-business needs to be firmly grounded in the whole of the business. To many in business, the rise of social media as an effective business tool might have been easily missed. A recent study showed that 54% of Fortune 100 companies now have a presence on Twitter and 30% are active on Facebook. Many of those businesses are extracting very real benefits from using social media. Like other businesses, E-marketplaces also cannot afford to have only one media (i.e. its website) to engage with existing and potential users. Instead, E-marketplaces need to be where their users are – and right now, that is on social media sites.
- ***Building Confidence:*** Beyond compliance with legal requirements one of the primary concerns of the parties involved in an electronic transaction is the key question of "Trust". It is fundamental to develop a sufficient degree of confidence in an electronic transaction such that the companies are willing to ship the product, transfer funds and enter into a binding contractual commitment in a real time environment. When it comes to electronic commercial transactions, if there is no trust, there is no deal.

Notes

Notes A key factor in increasing customer confidence is to prevent the risks of fraud and unlawful activities. There are various means of increasing the security of online financial transactions.

- ***Legal Aspects:*** As soon as you are doing business online, a legal framework comes into play which must be complied with to the letter. Fortunately, this sounds worse than it really is.

  After a slow start, electronic trading is taking off. People are going on-line at unprecedented rates and multiple on-line shops are appearing left and right.

  However, there are still a considerable number of barriers preventing many small and medium sized enterprises (SMEs) from going online and taking the opportunities offered by the Internet. These barriers include:

  - Laws & Regulations
  - Contractual Aspects
  - Online Payments
  - Privacy
  - Data Protection & Intellectual Property Rights

  These aspects are just a few of those numerous factors relevant for the companies which are planning to do e-business.

- ***E-business marketing:*** Online marketing is a powerful tool that gives you new possibilities, but should be used with insight.

Self Assessment

State whether the following statements are true or false:

13. An organisation's strategic planning process for e-business is not required to be firmly grounded in the whole of the business.
14. As soon as you are doing business online, a legal framework comes into play which must be complied with to the letter.
15. Online marketing is a powerful tool that gives you new possibilities, but should be used with insight.

Case Study

e-Business in Small Danish Furniture Manufacturers

The Danish furniture industry is very competitive. When related to the small population of Denmark, Danish furniture production and exports are quite significant on the global market, as the Association of Danish Furniture Industries (ADFI) claims.

Danish Furniture On-Line

The combination of advanced technology and an elevated level of technical competence makes productivity in the industry very high. Companies with less than 50 employees reach 84% of the productivity level of medium-sized and large enterprises.

Contd....

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This, together with the UK, is the highest level of all European countries for which data are available.

Danish furniture is sold through a wide variety of channels, including Internet sales. The most important furniture portal is "Danish Furniture On-Line", which is claimed to be "one of Europe's most important furniture gateways with links to more than 200 manufacturers".

Activities

Manufacturers' Index – online portal for the Danish furniture industry

The ADFI represents more than 90% of Danish furniture production, including almost 350 members in June 2004. As early as 1996, when the Internet was just taking off, the ADFI introduced "Danish Furniture On-Line" (http://www.danishfurniture.dk). The driving force behind creating this online portal was to give the ADFI's members opportunities to present their companies in a new electronic medium. The link to this portal is free of charge. In order to market the portal, the ADFI sent direct mails to some thousands of buyers of Danish furniture all over the world in 1999. In its current state, the portal is a pleasantly designed website with five rubrics:

- Manufacturers' Index, the internet portal of the furniture trade;
- Dansk Mobler Trade Magazine, providing information about advertising in this specialised press magazine;
- facts about Danish furniture industries, such as statistics on industry and market size and structure;
- consumers' tips, such as how to clean and maintain furniture adequately;
- press information.

Manufacturers' Index provides access to more than 230 Danish manufacturers and exporters of furniture and related furniture products. Each company has at least an information site with the company's name, products and e-mail address. Most firms also have a link to their website. The websites generally have a very high presentation quality. The Index lists firms of all size classes, but most of them are small firms, some of them proudly referring to a long tradition of family owned craft business. In 2002, the search facilities of the Index were extended to encompass suppliers in 13 different product categories, from dining room chairs to carpets and textiles, or to provide an alphabetical list of all companies. The international orientation of the Index is shown by the fact that it is available in Danish and English.

According to ADFI representative Jørgen Andersen there are no current plans to further develop it except by trying to ensure that every Danish furniture manufacturer is represented in the index.

The ADFI believes that one of the main benefits of the portal is that the companies get a lot of additional contacts. However, the ADFI does not follow up business results and is not informed to what extent the contacts actually lead to sales. The goods that best lend themselves to be sold online are probably cheap furniture and soft furnishings – for which the risk of not actually seeing them before purchasing is low – and brand furniture for which the customers know what they receive.

E-business at Aksel Kjersgaard furniture manufacturing

The Aksel Kjersgaard factory, a cabinet-making enterprise based in Odder at the Danish east coast, specialises in manufacturing very high quality tables, hall furniture and home office furniture.

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Notes

The firm was founded in 1952, has currently 25 employees and exports to most parts of the world. The factory established its website in 2001. This website includes a company profile, pictures of furniture products, and a contact page with a standard form for electronic inquiries. The website has developed into an important communication platform for customers to make inquiries, many of which are questions on where to buy certain products. "We didn't know how well-known we are", says company owner Jørgen Kjersgaard. Currently, the company receives around 10 to 15 inquiries a week. Increased communication with final customers is one of the most important changes the Internet has brought to the company. The firm's website is linked to the Manufacturers' Index in Danish Furniture On-line. Kjersgaard could not say how many contacts are triggered through the Manufacturers' Index, but as long as it does not cost anything to be listed, he finds it is worthwhile. His suggestion on how to improve the Index would be to include a search function for furniture styles because many customers are looking for certain specific ones.

Aksel Kjersgaard does not sell online because the high-quality furniture they produce does not lend itself to be sold through the Internet. "Our customers want to see and touch our furniture", says Jørgen Kjersgaard. "If anything goes wrong, it is expensive to send furniture back and forth". For this reason Kjersgaard prefers to sell through selected small brick-and-mortar vendors who also offer customer service. Online procurement practice at Aksel Kjersgaard is limited to goods such as machine parts and software. Direct production goods, particularly wood, as well as metal fittings, are bought offline because, as Jørgen Kjersgaard says, "there is no fixed price; you need to talk and negotiate". However, the Internet has been a valuable source of information about suppliers and their products in the past six years. Kjersgaard found several suppliers through the Internet. Most of the direct production goods come from Europe, but there are also suppliers from other parts of the world like India, for example.

Three people dealing with administrative tasks work with computers in a local area network with ADSL Internet access. The computers are used for common office purposes such as document exchange. Computer skills are acquired informally, for example by consulting friends and colleagues. In early 2004, the company introduced small CRM (Customer Relationship Management) software, a standard solution from a large software company, for accountancy and storage planning in order to improve customer tracing. The current number of customers is 400, mainly furniture vendors. Since most of these companies are small, they are not very advanced in e-business and improve their e-business practice slowly. Most of the orders come in by fax, only around 2% by e-mail, but the share is increasing.

Jørgen Kjersgaard does not see notable security problems related to the Internet, nor does he complain about complicated or expensive technology. His greatest concern is that competitors can look at his products online and copy them. In the future, he plans to search for customers more comprehensively through the Internet. Currently he uses the Internet mainly for verifying potential new vendors of his products. Their websites are an excellent source for judging if a vendor is right for selling his high-quality furniture. Before the Internet age, an agent had to look at the potential vendors personally – in this respect, "the Internet saves a great deal of money"

Conclusion

The case study of Danish Furniture On-line and the Aksel Kjersgaard cabinetmaker factory presents a good example of how small firms can use the Internet for customer service and marketing. While comprehensive e-business use may not be useful for many small furniture manufacturers, the Web offers opportunities for increasing the number of end customers and intermediate vendors, selecting more and better suppliers as well as

Contd....

Notes

improving customer service and reducing costs related to all these functions. With regard to the Manufacturers' Index, the Association of Danish Furniture Industries may want to collect evidence on the e-business practices and needs of firms listed, in order to make the portal even more valuable for customers and furniture firms.

Questions

1. Discuss how small firms can use the Internet for customer service and marketing.
2. How to make a portal more valuable for customers and furniture firms? Discuss.

Source: http://ec.europa.eu/enterprise/archives/e-business watch/studies/case_studies/documents/Case%20Studies%202004/CS_SR05_Crafts_1-AkselKjersgaard.pdf

8.5 Summary

- E-business is a term used to describe businesses run on the Internet, or utilising Internet technologies to improve the productivity or profitability of a business.
- E-Business presents a broader dimension of eCommerce as it represents the use of electronic technology, especially web and other network technology, for business.
- The business-to-business (B2B) group includes all applications intended to enable or improve relationships within firms and between two or more companies.
- An earlier and much more limited kind of online B2B prior to the Internet was Electronic Data Interchange (EDI), which is still widely used.
- Business-to-consumer (B2C) is an Internet and electronic commerce (e-commerce) model that denotes a financial transaction or online sale between a business and consumer.
- Customer to Customer (C2C), sometimes known as Consumer to Consumer, e-commerce involves electronically-facilitated transactions between individuals, often through a third party.
- C2C is expected to increase in the future because it minimises the costs of using third parties.
- To bridge the gap between government and citizens, to provide effective and efficient services, to increase productivity and to extend other benefits to its citizens, the governments of various countries introduced e-Governance applications.

8.6 Keywords

B2B: The business-to-business (B2B) group includes all applications intended to enable or improve relationships within firms and between two or more companies.

B2C: Business-to-consumer (B2C) is an Internet and electronic commerce (e-commerce) model that denotes a financial transaction or online sale between a business and consumer.

C2C: Customer to Customer (C2C), sometimes known as Consumer to Consumer, e-commerce involves electronically-facilitated transactions between individuals, often through a third party.

E-business: E-business is a term used to describe businesses run on the Internet, or utilising Internet technologies to improve the productivity or profitability of a business.

E-Commerce: E-commerce (electronic commerce or EC) is the buying and selling of goods and services on the Internet, especially the World Wide Web.

Notes

Electronic Data Interchange (EDI): Electronic Data Interchange is the **computer-to-computer** exchange of **routine business data** between trading partners in **standard data formats**.

E-governance: E-governance is the use of a range of modern Information and Communication Technologies (ICT) such as Internet, Local Area Networks, mobiles etc. by Government to improve the effectiveness, efficiency, service delivery and to promote democracy.

E-tailing: E-tailing is the selling of retail goods on the Internet.

8.7 Review Questions

1. What is e-business? Explain with example.
2. Why do we need e-business? Discuss.
3. Elucidate the concept of B2B e-business. Also give examples.
4. How B2C e-business led to the growth of public access to the Internet? Explain.
5. Make distinction between B2C (business-to-consumer) and C2C (consumer-to-consumer) e-business.
6. What is e-governance? Discuss some specific applications of e-governance.
7. Discuss the advantages of e-business.
8. Describe the issues related with e-business.
9. Classify different types of websites that can be used as a B2B website.
10. In addition to buying and selling products, e-business may also handle other traditional business aspects. Comment.

Answers: Self Assessment

1.	E-business	2.	B2B (business-to-business)
3.	Business to Consumer (B2C)	4.	Customer to Customer (C2C)
5.	e-procurement	6.	Brokering sites
7.	Information and Communication Technologies (ICT)		
8.	e-governance	9.	government-to-government
10.	False	11.	True
12.	True	13.	False
14.	True	15.	True

8.8 Further Readings

Books

Brian Stanford-Smith. (2000). *E-Business: Key Issues, Applications and Technologies*, IOS Press

Colin Combe. (2012), *Introduction to e-Business*, Routledge

Lisa Harris. (2003). *E-business Fundamentals*, Psychology Press

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Notes

Online links

http://fse.tibiscus.ro/anale/Lucrari2009/076.%20Radut,%20Vilaia.pdf

http://www.mmv.vic.gov.au/Assets/232/1/IntroductionToebusiness.pdf

http://www.datahousecorp.com/eng/technology/e-commerce.htm

http://onlinebusiness.volusion.com/articles/e-business-advantages/

Notes

Unit 9: Mobile Commerce

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Objectives

After studying this unit, you should be able to:

- Define the concept of mobile commerce
- Identify the advantages and disadvantages of m-commerce
- Describe the framework of m-commerce
- Discuss m-commerce applications
- State the growth trends of m-commerce

Introduction

Mobile Commerce is any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobile access to computer-mediated networks with the help of an electronic device. Mobile commerce (m-commerce) is creating entirely new opportunities both for mobile devices and services. So, we can say that m-commerce means transactions using a wireless device and data connection, which result in the transfer of value in exchange of information, services, or goods. An m-commerce transaction is defined as any type of transaction of an economic value that is conducted through a mobile device that uses a wireless telecommunications network for communication with the e-commerce infrastructure. M-commerce differs partially from e-commerce (electronic commerce) due to the special characteristics and constraints the mobile devices and wireless networks have. Known as next-

generation e-commerce, m-commerce enables users to access the Internet without needing to find a place to plug in.

9.1 Concept of M-Commerce

M-commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs). Known as next-generation e-commerce, m-commerce enables users to access the Internet without needing to find a place to plug in. The emerging technology behind m-commerce, which is based on the Wireless Application Protocol (WAP), has made far greater strides in Europe, where mobile devices equipped with Web-ready micro-browsers are much more common than in the United States.

In order to exploit the m-commerce market potential, handset manufacturers are working with carriers such as AT&T Wireless and Sprint to develop WAP-enabled smart phones, the industry's answer to the Swiss Army Knife, and ways to reach them.

Example: Handset manufacturers include Nokia, Ericsson, Motorola, and Qualcomm.

Using Bluetooth technology, smart phones offer fax, e-mail, and phone capabilities all in one, paving the way for m-commerce to be accepted by an increasingly mobile workforce.

As content delivery over wireless devices becomes faster, more secure, and scalable, there is wide speculation that m-commerce will surpass wireline e-commerce as the method of choice for digital commerce transactions. The industries affected by m-commerce include:

Financial services, which includes mobile banking (when customers use their handheld devices to access their accounts and pay their bills) as well as brokerage services, in which stock quotes can be displayed and trading conducted from the same handheld device.

- Telecommunications, in which service changes, bill payment and account reviews can all be conducted from the same handheld device.
- Service/retail, as consumers are given the ability to place and pay for orders on-the-fly
- Information services, which include the delivery of financial news, sports figures and traffic updates to a single mobile device.

Did u know? What is personal digital assistant?

PDA (personal digital assistant) is a term for any small mobile hand-held device that provides computing and information storage and retrieval capabilities for personal or business use.

9.1.1 Advantages of M-Commerce

The following list summarises the advantages of m-commerce:

1. ***Ubiquity:*** The use of wireless device enables the user to receive information and conduct transactions anywhere, at anytime.
2. ***Accessibility:*** Mobile device enables the user to be contacted at virtually anytime and place. The user also has the choice to limit their accessibility to particular persons or times.
3. ***Convenience:*** The portability of the wireless device and its functions from storing data to access to information or persons.

Notes

4. ***Localization:*** The emergence of location-specific based applications will enable the user to receive relevant information on which to act.
5. ***Instant Connectivity (2.5G):*** Instant connectivity or "always on" is becoming more prevalent will the emergence of 2.5 G networks, GPRS or EDGE. Users of 2.5 G services will benefit from easier and faster access to the Internet.
6. ***Personalization:*** The combination of localization and personalization will create a new channel/business opportunity for reaching and attracting customers. Personalization will take the form of customized information, meeting the users' preferences, followed by payment mechanisms that allow for personal information to be stored, eliminating the need to enter credit card information for each transaction.
7. ***Sensitivity:*** Access to real-time information such as a stock quote that can be acted upon immediately or a sale at a local boutique.
8. ***Security:*** Depending on the specific end user device, the device offers a certain level of inherent security.

9.1.2 Disadvantages of M-Commerce

The disadvantages of m-commerce are discussed as below:

1. Mobile devices offer limited capabilities (such as limited display). Between mobile devices these capabilities vary so much that end user services will need to be customized accordingly.
2. The heterogeneity of devices, operating systems and network technologies is a challenge for a uniform end user platform. For this reason, standardization bodies consisting of telecommunication companies, device manufacturers and value added service providers integrate their work.
3. Mobile devices are more prone to theft and destruction.
4. The communication over the air interface between mobile device and network introduces additional security threats.

Self Assessment

Fill in the blanks:

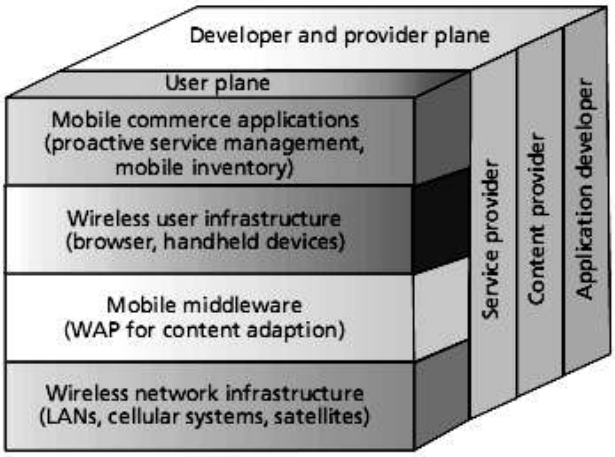
1. ..... is the buying and selling of goods and services through wireless handheld devices.
2. An m-Commerce transaction is defined as any type of transaction of an economic value that is conducted through a ..... that uses a wireless telecommunications network for communication.

9.2 Mobile Commerce Framework

Figure 9.1 shows our framework for mobile commerce, which lets companies strategize and create mobile commerce applications. The framework defines several functional layers, simplifying the design and development so that different parties—vendors, providers, designers, and so on—can address individual layers. By using this framework, a single entity is not forced to do everything to build mobile commerce systems, but can build on the functionalities provided by others.

Notes

Figure 9.1: The Proposed Framework for Mobile Commerce Showing a user Plane with Four Levels and a Developer-provider Plane with three Levels



Source: http://www.csee.umbc.edu/courses/graduate/666/mobile_commerce.pdf

The framework shown above includes a user plane with four levels:

- ***Applications.*** Many new applications are becoming possible, and many existing e-commerce applications can be modified for a mobile environment.
- ***User infrastructure.*** The design of new mobile commerce applications should consider the capabilities of the user infrastructure—the mobile devices.
- ***Wireless Middleware.*** With its ability to hide the underlying network's details from applications while providing a uniform and easy-to-use interface, middleware is extremely important for developing new mobile commerce applications.
- ***Network infrastructure.*** In mobile commerce, service quality primarily depends on network resources and capabilities.

Notes The framework also provides a developer-provider plane, which addresses the different needs and views of application developers, content providers, and service providers.

Task Make distinction between user infrastructure and network infrastructure.

Self Assessment

Fill in the blanks:

3. Mobile commerce ..... allows companies to strategize and create mobile commerce applications.
4. The design of new mobile commerce applications should consider the capabilities of the .....

Notes

5. In mobile commerce, service quality primarily depends on ..... resources and capabilities.

9.3 M-Commerce Applications

The general m-commerce applications are:

Mobile Ticketing

Tickets can be sent to mobile phones using a variety of technologies. Users are then able to use their tickets immediately by presenting their phones at the venue.

Tickets can be booked and cancelled on the mobile with the help of simple application downloads or by accessing WAP portals of various Travel agents or direct service providers. Mobile ticketing will not only streamline unexpected metropolitan traffic surges, but also help users remotely secure parking spots (even while in their vehicles) and greatly facilitate mass surveillance at transport hubs.

Example: Tickets can be booked on mobile for airports, ballparks, train stations, etc.

Mobile Vouchers, Coupons and Loyalty Cards

Mobile ticketing technology can also be used for the distribution of vouchers, coupons and loyalty cards. The voucher, coupon, or loyalty card is represented by a virtual token that is sent to the mobile phone. Presenting a mobile phone with one of these tokens at the point of sale allows the customer to receive the same benefits as another customer who has a loyalty card or other paper coupon/voucher. Mobile delivery enables:

- economy of scale
- quicker and easier delivery
- effective target marketing
- privacy-friendly data mining on consumer behaviour
- environment-friendly and resources-saving efficacy
- Content purchase and delivery

Currently, mobile content purchase and delivery mainly consists of the sale of ring-tones, wallpapers, and games for mobile phones. The convergence of mobile phones, mp3 players and video players into a single device will result in an increase in the purchase and delivery of full-length music tracks and video. Download speeds, if increased to 4G levels, will make it possible to buy a movie on a mobile device in a couple of seconds, while on the go.

Location-based Services

Unlike a home PC, the location of the mobile phone user is an important piece of information used during mobile commerce transactions.

Example: Knowing the location of the user allows for location based services such as:

- local maps
- local offers

Notes

- local weather
- people tracking and monitoring

Information Services

A wide variety of information services can be delivered to mobile phone users in much the same way as it is delivered to PCs. These services include:

- news services
- stock data
- sports results
- financial records
- traffic data and information

Particularly, more customized traffic information, based on users' travel patterns, will be multicast on a differentiated basis, instead of broadcasting the same news and data to all Users. This type of multicasting will be suited for more bandwidth-intensive mobile equipment.

Mobile Banking

Banks and other financial institutions are exploring the use of mobile commerce to allow their customers to not only access account information, but also make transactions, e.g. purchasing stocks, remitting money, via mobile phones and other mobile equipment. This service is often referred to as Mobile Banking or M-Banking. More negative issues like ID theft, phishing and pharming are lurking when it comes to mobile banking, particularly done on the mobile web. Net security technology free from redundancy and paradigm shifts away from mobile web-based banking will be an optimal solution to mobile banking in the near future.

Mobile Brokerage

Stock market services offered via mobile devices have also become more popular and are known as Mobile Brokerage. They allow the subscriber to react to market developments in a timely fashion and irrespective of their physical location.

Auctions

Over the past three years, mobile reverse action solutions have grown in popularity. Unlike traditional auctions, the reverse auction (or low-bid auction) bills the consumer's phone each time they place a bid. Many mobile PSMS commerce solutions rely on a one-time purchase or one-time subscription; however, reverse auctions are high return applications as they allow the consumer to transact over a long period of time.

Mobile Purchase

Mobile purchase allows customers to shop online at any time in any location. Customers can browse and order products while using a cheap, secure payment method. Instead of using paper catalogues, retailers can send customers a list of products that the customer would be interested in, directly to their mobile device or consumers can visit a mobile version of a retailer's e-commerce site. Additionally, retailers will also be able to track customers at all times and notify them of discounts at local stores that the customer would be interested in.

Notes

Mobile Marketing and Advertising

Mobile marketing is an emerging concept, but the speed with which it's growing its roots is remarkable. Mobile marketing is highly responsive sort of marketing campaign, especially from brands' experience point of view. And almost all brands are getting higher campaign response rates. Corporations are now using m-commerce to expand everything from services to marketing and advertisement. Although there are currently very few regulations on the use and abuses of mobile commerce, this will change in the next few years. With the increased use of m-commerce comes increased security.

Notes Cell phone companies are now spending more money to protect their customers and their information from online intrusions and hackers.

Task Describe the use of M-Banking.

Caselet

Airtel Enters Mobile Advertising Space

Bharti Airtel announced its foray into the mobile advertising (m-Advertising) segment, in India. With this, Airtel will equip advertisers to connect with their potential customers in a targeted and personalised fashion via their mobile phones. The platform is designed to meet all the essential demands of advertisers such as inventory management, campaign management, reporting and analytics.

Commenting on the development, Mr K. Srinivas, President – Consumer Business, Bharti Airtel, said, "We are excited to launch our mobile advertising platform. Personalisation, sharp segmentation and contextualisation are increasingly making this platform an exciting proposition for brands. With the mobile advertising market poised to grow by more than 40 per cent over the next few years, Airtel with its technology, scale and customer intelligence is placed uniquely to leverage this growing medium. Airtel's m-advertising platform will enable advertisers to land their message in a simple, effective manner in an increasingly complex media environment."

Through Airtel's m-Advertising platform, advertisers will be able to leverage multiple communications outlets and tools such as mobile internet (WAP), Messaging services and Airtel digital TV to engage their audiences. The company said it has the capability to deliver massive reach in a high impact burst which can be delivered in just a few hours using touch points such as end of call notifications, recharge notifications & Digital TV guides. It will not only create opportunities for increasing brand saliency but also conversions using technologies such as mobile couponing for segments such as youth, upper SEC, smart phone users etc. With this platform, companies can also extend their access to the rural audience with voice solutions.

Source: http://www.thehindubusinessline.com/industry-and-economy/info-tech/airtel-enters-mobile-advertising-space/article3462088.ece

Notes

Self Assessment

State whether the following statements are true or false:

6. The voucher, coupon, or loyalty card is represented by a virtual token that is sent to the mobile phone.
7. It is not required to know the location of the mobile phone user during mobile commerce transactions.
8. Stock market services offered via mobile devices have also become more popular and are known as Mobile Banking.
9. Mobile purchase allows customers to shop online at any time in any location.
10. Traditional auctions, the reverse auction (or low-bid auction) bills the consumer's phone each time they place a bid.

9.4 Growth Trends in M-Commerce

Mobile commerce has seen a significant growth in recent months and this is a trend that is widely anticipated to continue. Mobile strategies are becoming increasingly important and any advertiser that doesn't have a mobile presence could be missing out on a considerable amount of sales. Significant growth has been seen across a number of m-commerce channels, primarily driven by search and display. The growth of additional technologies such as location based services and Quick Response (QR) codes are seeing the channel develop even further, providing a link between off-line to on-line and vice versa. The growth trends can be discussed in the following areas:

9.4.1 Mobile Search

Mobile search has been a significant growth area over the past year. Research conducted by Efficient Frontier highlights that mobile search spend accounted for just 0.34% of total search spend in June 2010. By March 2011 this had increased to 1.7% and mobile search is predicted to grow rapidly – potentially accounting for 4.3% by the end of the year.

Currently click prices are typically lower for mobile search although this may vary significantly from sector to sector. Additional research from Efficient Frontier has found that advertisers are experiencing higher click through rates through mobile search. On average, click through rates are 2.7% higher than desktop searches. However, despite click through rates being higher, conversion rates are often lower than experienced through desktop . This is likely to be down to the user experience. If a customer lands on a site through mobile search that has not been optimised for mobile, the user journey could be fiddly and cause the consumer to abandon their attempt to purchase. This again highlights the benefit of having a fully optimised mobile site. Mobile search also lends itself to local searches. Often consumers could be looking for somewhere to buy locally.

With the addition of phone numbers within mobile search ads, retailers could drive sales on a cost per call model. This is simple to set up and monitor, lending itself well to a cost per lead model. Conversion rates for well executed campaigns can be exceptionally high. Additionally, mobile search can tie in with location based marketing to drive footfall to stores.

9.4.2 Mobile Display

Mobile display spend is also growing rapidly. The annual IAB PwC Adspend study showed that mobile display spends grew 62% in 2009 and 116% in 2010. This is widely anticipated to increase further in 2011.

Notes

While mobile display has traditionally been dominated by entertainment and media, traditional advertisers are really starting to understand the opportunities that mobile offers.

Example: Traditional advertisers include finance, telecoms and consumer goods.

Jon Mew, Director of Mobile and Operations at the IAB states:

"Mobile advertising allows advertisers to target people on the move, and capture them when they're most receptive. It's an exciting time for mobile advertising and for advertisers who use the opportunities".

Recent research from the IAB in conjunction with John Lewis has also demonstrated the effectiveness of mobile advertising. The research uncovered that unprompted awareness increased from 3% to 24%. The study also noted that having a mobile optimised site as the destination after the click had an immediate and positive knock on effect. 64% said they were either 'very impressed' or 'impressed' with the brand as a result of visiting the optimised John Lewis site. Advertisers that did not have a mobile optimised site were at risk of losing customers with 30% of consumers saying they would either not purchase the goods at all, or opt to purchase from a competitor.

Some of the top tips that the study highlighted were:

- Use mobile to increase brand awareness - mobile advertising increased unprompted awareness amongst those exposed to the advertising by 822%
- Invest in rich media to increase your cut through – those exposed to the expandable banner were 25% more likely to remember the advertising than those who saw the static banners
- Target rich media to advanced smart phones to increase impact – Android/iPhone users were 50% more likely to recall an expandable banner than other smart phone users
- Plan thoroughly – although rich media is effective it can become an annoyance if irrelevant, with 11% stating so, compared to only 6% amongst those who saw the static banner
- Have a mobile optimised destination site to avoid a loss of potential revenue- 30% of consumers admitted they would take their business elsewhere if the mobile site experience was poor.

9.4.3 Location-based Services

The convenience of mobile is opening up a number of opportunities for advertisers. In a recent Forbes editorial piece, Mike Tittel comments that mobile marketing is all about location. He says that mobile devices have for the first time ever made location and context the most important things to consider in mobile marketing. With mobile devices being carried with consumers everywhere, the location of the customer with the device and what they are doing determines how receptive they are to mobile advertising.

Advertisers are able to use location based targeting to reach out to customers who have indicated a willingness to be targeted by relevant ads. 'Starbucks' ran a campaign with O2 More where customers input details about their age, gender and interests such as football, travel, cinema, coffee and beauty products. When opted in, customers within a geo-fenced area defined by Starbucks were sent money off voucher for their next purchase. This enabled Starbucks to create brand loyalty, reinforce messaging and increase footfall to stores. Previously it has been difficult to deliver customers offline from online and vice versa, certainly in a measurable way, but mobile has demonstrated the ability to bridge that gap. With the development of location based

services, it allows advertisers to gain greater footfall to stores and target customers with rewards for purchasing. Within the affiliate channel location based targeting is used by a number of affiliate apps who promote offers to be redeemed in store. Location based marketing opens up a number of opportunities for advertisers to target customers effectively.

Example: Affiliate applications include Vouchercloud and Quidco.

9.4.4 Quick Response (QR) Codes

Whilst the technology is nothing new, it is only recently that Quick Response (QR) codes are becoming more widely used. They can be seen everywhere from till receipts to billboard advertising.

With more advanced QR readers becoming available as downloadable apps, the opportunity for using QR codes is increasing. When mobile devices start to have QR readers built in they will become even more mainstream. By adding a QR code to a marketing campaign advertisers are able to create interactive media. QR codes contained in magazine adverts can be scanned to take consumers through to a mobile site or page giving more details on the product and the opportunity to transact.

Again, if a fully optimised mobile site is not in place, conversion rates could be compromised. Mobilecommercedaily.com reports that in the US, usage of QR codes was up by 1200% in the second half of 2010, representing a potentially massive opportunity for advertisers. They can serve both as brand awareness and direct response vehicles.

As with location based services being able to drive customers in store from online, QR codes demonstrate the ability to drive customers in the opposite direction. Adoption of QR codes remains a challenge, with the majority of consumers unaware of their function and an even larger number who experience QR code 'blindness'.

Did u know? A QR code (quick response code) is a type of 2D bar code that is used to provide easy access to information through a smart phone.

9.4.5 Augmented Reality

Augmented reality is a relatively new technology, but one that opens up exciting opportunities for advertisers. With a number of apps readily available to overlay a street view with information, retailers can provide consumers with an interactive view of the high street. Consumers can use their smart phone to gain information as they walk down the street. Retailers are able to display their latest products or promotions in an attempt to drive them into stores. When in store, they then have the ability to up sell and cross sell to them. While QR codes bridges the gap from offline to online, augmented reality can stimulate interest online to convert offline.

With all of the latest technological advancements to enhance a mobile strategy, it is important that advertisers have fully optimised mobile sites in place to reap the rewards.

Caution Directing consumers to a site that is not mobile ready could result in a poor user experience and they may be unlikely to return.

Notes

Self Assessment

State whether the following statements are true or false:

11. Mobile search cannot tie in with location based marketing to drive footfall to stores.
12. Mobile advertising allows advertisers to target people on the move, and capture them when they're most receptive.
13. Within the affiliate channel location based targeting is used by a number of affiliate apps such as who promote offers to be redeemed in store.
14. With more advanced QR readers becoming available as downloadable apps, the opportunity for using QR codes is increasing.
15. While augmented reality bridges the gap from offline to online, QR code can stimulate interest online to convert offline.

Case Study

Canyon Country Car Wash: SMS

Name of marketer

Canyon Country Car Wash, Santa Clarita, CA

Agency or marketing services firm

OzNet Systems, Altadena, CA

Campaign/program name

Carwash Mobile Coupons

Duration

Two months

Objective

Competition became very stiff after the third car wash opened for business. The objective of the mobile couponing initiative was to compete with the two car-wash establishments located within a one-mile radius.

Target audience

The mobile coupons were targeted at teenagers ages 16-19 and young adults ages 20-24.

Strategy

Realizing the current economic situation in Santa Clarita as well as the two competing area car washes, Canyon Country had to think of something innovative.

The company chose to target young people because of their early adaptability to mobile technology and the fact that times were tight and they still wanted clean cars.

Canyon Country decided to use mobile coupons to capitalize on the fact that most teens abhor walking around with lots of paper. Their world exists within the mobile phone, so why not offer them scannable coupons, which also adds to their cool factor.

Contd....

Notes

Figure 1: Canyon Country Car Wash offers Scannable Mobile Coupons

Teens were encouraged to engage in viral marketing by sending the keyword and short code to their friends.

Call to action

"Get your mobile coupon. Text CARWASH to 84045."

Tactics

Canyon Country Car Wash has used viral marketing to keep the momentum going and spread the word on car washes.

The company put up a large sign in front of the car wash so kids can see it as they are heading home from school or work.

Canyon Country informs each customer about mobile coupons at checkout.

Results

Two out of five customers walking through the door inquire about mobile coupon. Redemption rate is at 40 percent and increasing.

What next

Canyon County will combine other social networking tools such as Twitter and Facebook to advertise mobile promotions.

It will develop a Web site for customers to select coupons, register and send to their mobile phones.

Lessons learned

Canyon County had to scan customers' phones while they are holding it, as most are not willing to part with their phone. Teens and younger adults tend not to mind the cashier holding their phone.

Surprise finding

Some customers are shying away from using a short code to receive mobile coupons on their phone.

Although signs are posted, customers are verbally informed that no extra cost will be incurred provided one has a text messaging agreement with a network carrier.

Contd....

Notes

Also the technology could be quite intimidating to the average customer, hence more education is needed.

Strategy quote

"Knowing that teens want to cruise the boulevard on the weekends with a clean car the mobile coupon advertisement went out, our client had no way of capturing information on their customers that was quick and convenient," said Regina Thomas, marketing executive at OzNet Systems.

"Mobile coupons allows Canyon Country Car Wash to engage with their customers and obtain instant feedback on what kinds of offers and services they want," she said.

Question

What are the benefits of having mobile coupons as against normal coupons?

Source: http://www.mobilecommercedaily.com/sms-case-study-%E2%80%93-canyon-country-car-wash

9.5 Summary

- M-Commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and Personal Digital Assistants (PDAs).
- An M-Commerce transaction is defined as any type of transaction of an economic value that is conducted through a mobile device that uses a wireless telecommunications network for communication with the e-commerce infrastructure.
- Known as next-generation e-commerce, m-commerce enables users to access the Internet without needing to find a place to plug in.
- M-Commerce framework defines several functional layers, simplifying the design and development so that different parties—vendors, providers, designers, and so on—can address individual layers.
- The framework also provides a developer-provider plane, which addresses the different needs and views of application developers, content providers and service providers.
- The location of the mobile phone user is an important piece of information used during mobile commerce transactions.
- Mobile purchase allows customers to shop online at any time in any location. Customers can browse and order products while using a cheap, secure payment method.
- Mobile commerce has seen a significant growth in recent months and this is a trend that is widely anticipated to continue.

9.6 Keywords

Augmented Reality (AR): Augmented Reality (AR) is the integration of digital information with live video or the user's environment in real time.

Location-based Services: Location-based services are a general class of computer program-level services used to include specific controls for location and time data as control features in computer programs.

M-Commerce Transaction: M-Commerce transaction is defined as any type of transaction of an economic value that is conducted through a mobile device that uses a wireless telecommunications network for communication with the e-commerce infrastructure.

Notes

M-Commerce: M-commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs).

Mobile Banking: Mobile Banking means a financial transaction conducted by logging onto a bank's website using a cell phone.

Mobile Brokerage: Stock market services offered via mobile devices are known as Mobile Brokerage.

Personal Digital Assistant (PDA): is a term for any small mobile hand-held device that provides computing and information storage and retrieval capabilities for personal or business use.

QR code: A QR code (quick response code) is a type of 2D bar code that is used to provide easy access to information through a smart phone.

9.7 Review Questions

1. What do you mean by M-Commerce? Illustrate the concept of m-commerce with examples.
2. What are the advantages and disadvantages of m-Commerce? Discuss.
3. Explain the framework of mobile commerce.
4. Discuss the growth trends of mobile commerce.
5. Describe the various applications of m-commerce with the help of suitable example.
6. Illustrate the growth in mobile display in recent years.
7. What is augmented reality? Discuss its growth in recent years.
8. Elucidate the concept of mobile marketing and advertising.
9. Banks and other financial institutions are exploring the use of mobile commerce to allow their customers to not only access account information, but also make transactions. Comment.
10. What is mobile banking? Discuss with example.

Answers: Self Assessment

1.	M-commerce (mobile commerce)	2.	mobile device
3.	Framework	4.	user infrastructure
5.	network	6.	True
7.	False	8.	False
9.	True	10.	True
11.	False	12.	True
13.	True	14.	True
15.	False		

Notes

9.8 Further Readings

Books

Deans, P. Candace, (2005). *Electronic Commerce and Mobile Commerce Technologies*, Idea Group Inc (IGI)

Mennecke, Brian Ernest, (2003). *Mobile Commerce: Technology, Theory, and Applications*, Idea Group Inc (IGI)

Shi, Nansi, (2004). *Mobile Commerce Applications* , Idea Group Inc (IGI)

Shi, Nansi, (2004). *Wireless Communications and Mobile Commerce* , Idea Group Inc (IGI)

Online links

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http://seit.unsw.adfa.edu.au/coursework/ZEIT3104/pdfs/L17-m-Commerce.pdf

http://azportal.uum.edu.my/TM5013/Chapters_summary/ch08.pdf

http://www.articlesbase.com/ecommerce-articles/mcommerce-and-its-applications-1011452.html

Notes

Unit 10: Enterprise Resource Planning – I

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Objectives

After studying this unit, you should be able to:

- Identify the concept of ERP
- Discuss the relationship between ERP and CRM
- Explain the relationship between ERP and SCM
- Discuss the benefits of ERP
- Recognize the issues related with ERP

Introduction

Enterprise Resource Planning (ERP) is an industry term for the broad set of activities that helps a business manages the important parts of its business. The information made available through an ERP system provides visibility for key performance indicators (KPIs) required for meeting corporate objectives. ERP software applications can be used to manage product planning, parts purchasing, inventories, interacting with suppliers, providing customer service, and tracking orders. ERP can also include application modules for the finance and human resources aspects of a business. Typically, an ERP system uses or is integrated with a relational database system. With the advance of enterprise wide client/server computing comes a new challenge: how to control all major business processes with single software architecture in real time. Such an integrated software solution, known as enterprise resource planning (ERP) or just enterprise systems, is a process of planning and managing all resources and their use in the entire enterprise.

Dr. Manmohan Sharma, Lovely Professional University

10.1 Enterprise Resource Planning

Enterprise Resource Planning (ERP) is an enterprise-wide information system designed to coordinate all the resources, information, and activities needed to complete business processes such as order fulfilment or billing.

Notes

It is software comprised of a set of applications that automate routine back-end operations, such as ûnancial inventory management, and scheduling, to help enterprises handle jobs such as order fulfilment.

Example: In an ERP system there is a module for cost control, for accounts payable and receivable, for fixed assets and treasury management.

An ERP system supports most of the business system that maintains in a single database the data needed for a variety of business functions such as Manufacturing, Supply Chain Management, Financials, Projects, Human Resources and Customer Relationship Management.

An ERP system is based on a common database and a modular software design. The common database can allow every department of a business to store and retrieve information in real-time. The information should be reliable, accessible and easily shared. The modular software design should mean a business can select the modules they need, mix and match modules from different vendors, and add new modules of their own to improve business performance.

Ideally, the data for the various business functions are integrated. In practice the ERP system may comprise a set of discrete applications, each maintaining a discrete data store within one physical database.

The term ERP originally referred to how a large organization planned to use organizational wide resources. In the past, ERP systems were used in larger more industrial types of companies. However, the use of ERP has changed and is extremely comprehensive, today the term can refer to any type of company, no matter what industry it falls in. In fact, ERP systems are used in almost any type of organization – large or small.

In order for a software system to be considered ERP, it must provide an organization with functionality for two or more systems. While some ERP packages exist that only cover two functions for an organization, most ERP systems cover several functions.

Today's ERP systems can cover a wide range of functions and integrate them into one unified database.

Example: Functions such as Human Resources, Supply Chain Management, Customer Relations Management, Financials, Manufacturing functions and Warehouse Management functions were all once stand alone software applications, usually housed with their own database and network, today, they can all fit under one umbrella – the ERP system.

The term enterprise resource planning is misleading because the software does not concentrate on either planning or resources. ERP's major objective is to integrate all departments and functions across a company onto a single computer system that can serve all of the enterprise's needs.

Example: Improved order entry allows immediate access to inventory, product data, customer credit history, and prior order information. This availability of information raises productivity and increases customer satisfaction. ERP, for example, helped Master Product Company increase customers' satisfaction and, consequently, sales by 20 percent and decrease inventory by 30 percent, thus increasing productivity.

Notes ERP promises benefits ranging from increased efficiency to improved quality, productivity and profitability.

Notes

Self Assessment

Fill in the blanks:

1. The term ..... originally referred to how a large organization planned to use organizational wide resources.
2. An ERP system is based on a common database and a modular ..... design.
3. In practice the ERP system may comprise a set of discrete applications, each maintaining a discrete ..... within one physical database.

10.2 ERP and CRM

CRM means "customer relation management." which is software designed to manage all customer interactions in an organized way. It is totally focused on customer management – capturing information pertaining to customer accounts only.

For an entrepreneur who is planning to expand his business, it seems to require a great deal of software which benefits for the organization in terms of profits, expansion and accuracy. CRM and ERP are both business designed software's, but for an Entrepreneur it is a matter of trouble as to which software he should apply. ERP and CRM software both focuses on efficiently integrating the different business processes – production, finance, sales, marketing and customer relationships.

From point of view of managerial ideology, the ERP management idea is enhancing the planning and control of internal resources in an enterprise, whereas the primary motive behind the CRM concept is to establish, develop and maintain customer relationships. CRM and ERP solution integrated across your enterprise in real-time providing your company with the best workflow automation possible. These include CRM, Inventory Management, Product Management, Project Management, accounting and Human Resources Management solutions. Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems are the two of the most popular business systems, sharing some common features but differing in most. Many software developers have also managed to build systems which can perform as CRM and ERP systems at a time because both are ultimately working to achieve the goals of the business organization.

ERP systems are enterprise-oriented systems which improve coordination between different company departments, not just limited to sales and marketing, help to gather key enterprise data and manage these data in an unified database, whereas, CRM systems are more customer-oriented which mainly improve coordination between sales and marketing departments, automate sales and marketing and customer service practices, enhances communication between sales persons, gather key information about customers and opportunities, and manage these information is a centralized database. Both software applications are different but both are even supporting same business technological fields.

CRM and ERP have a collaborative relationship. Imagine that CRM is the point of a large V that faces outward to your customer base, where it is used to track and predict sales. To back up that effort, information needs to be coordinated with the sales department's organizations — finance, manufacturing, product development and marketing. But how do these teams communicate with each other effectively? That's where ERP comes in. ERP is an internal system that coordinates information between various departments and ensures the lifeblood flows through your enterprise to help profitability. Definitely CRM is a part of ERP, but both relatively perform for the company integration.

Notes

From the view of the management concept and design, we can see that ERP and CRM are not completely different, but are also very closely related. The important point lies in the fact that they want to maximize and prolong profit making for the enterprise, and to achieve a maximum return of investment (ROI) rate.

With time, CRM is becoming a vital part of ERP, which was not true until early years of this decade.

Did u know? The requirements and possibilities of implementation depend from business to business. If you (or your IT department) are smart enough, you can tweak the model of the combination favouring your business.

Task Explain the collaborative relationship of CRM and ERP.

Self Assessment

Fill in the blanks:

4. ..... is a software designed to manage all customer interactions in an organized way.
5. For an ..... who is planning to expand his business, it seems to require a great deal of software which benefits for the organization in terms of profits, expansion and accuracy.

10.3 ERP and SCM

Supply chain refers to the flow of materials, information, payments, and services from raw material suppliers, through factories and warehouses, to the end customers. A supply chain also includes the organizations and processes that create and deliver products, information, and services to the end customers. The function of supply chain management (SCM) is to plan, organize, and coordinate all the supply chain's activities. Today the concept of SCM refers to a total systems approach to managing the entire supply chain.

Enterprise Resource Planning and Supply Chain Management is a formal method to effectively plan all the resources in the business enterprise. Through the implementation of Enterprise Resource Planning and Supply Chain Management manufacturing companies establish operating systems and operating performance measurements to enable them to manage business operations and meet business and financial objectives. ERP and Supply Chain Management extends beyond the four walls of the factory to include a company's trading partners – suppliers and customers. It is the company architecture for formal business systems and best in class business processes, practices and procedures.

Example: Buker client companies implementing Enterprise Resource Planning & Supply Chain Management business practices are achieving the following results:

- 250% return on the ERP & Supply Chain Management implementation
- Achieve 98% inventory record accuracy and eliminate the physical inventory

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- Achieve 95-99% schedule attainment
- Achieve 95-99% customer service
- Reduce inventory 25-40%
- Improve productivity 10-20%
- Achieve +95% on time supplier delivery
- Formal sales and operations planning process
- Achieve 98% routing accuracy
- Achieve 99% bill of material accuracy

Assembling the information need to feed the SCM applications from legacy systems can be tedious as it is difficult to get that information flowing on a fast, reliable basis from all the areas of an organization. An ERP system integrates all that information together in a single application and SCM applications benefit from having a single major source to go to for up-to-date information.

Majority of the management people who have tried to install SCM applications say they are glad they did ERP first. They term the ERP projects making your information house in order. Now most ERP solution providers have SCM modules so doing an ERP project may be a way to have these both in one go. What the organizations must do is that they must evaluate whether these applications meet their needs.

Many times software applications that automate the logistics aspects of SCM do not gather information from around the company, so they tend to be independent of the ERP decision. But it is better to have these applications communicate with ERP in some fashion. It's also important to pay attention to the software's ability to integrate with the Internet and with ERP applications because the Internet will drive demand for integrated information.

Many SCM applications are reliant upon the kind of information that is stored in the most quantity inside ERP software. Theoretically you could assemble the information you need to feed the SCM applications from legacy systems (for most companies this means Excel spreadsheets spread out all over the place), but it can be nightmarish to try to get that information flowing on a fast, reliable basis from all the areas of the company. ERP is the battering RAM that integrates all that information together in a single application, and SCM applications benefit from having a single major source to go to for up-to-date information. Most CIOs who have tried to install SCM applications say they are glad they did ERP first. They call the ERP projects "putting your information house in order." Of course, ERP is expensive and difficult, so you may want to explore ways to feed your SCM applications the information they need without doing ERP first. These days, most ERP vendors have SCM modules so doing an ERP project may be a way to kill two birds with one stone. Companies will need to decide if these products meet their needs or if they need a more specialized system.

Applications that simply automate the logistics aspects of SCM are less dependent upon gathering information from around the company, so they tend to be independent of the ERP decision. But chances are that you'll need to have these applications communicate with ERP in some fashion. It's important to pay attention to the software's ability to integrate with the Internet and with ERP applications because the Internet will drive demand for integrated information.

Example: If you want to build a private website for communicating with your customers and suppliers, you will want to pull information from ERP and supply chain applications together to present updated information about orders, payments, manufacturing status and delivery.

Notes

Caselet

3i InfoTech Unveils New Orion Enterprise Solution

Financial technology solutions and services provider 3i InfoTech has unveiled the advanced and upgraded version of its Enterprise Resource Planning (ERP) solution, Orion Enterprise, in Kuwait. The ERP platform, with built-in CRM and SCM and business intelligence capabilities, offers organisations sharp insights into and control over operations across the value chain through a single application, the company said.

With its suite of tools such as workflow management portal, individual desktop and business intelligence and a set of ready functional modules mapped to best industry practices, Orion Enterprise addresses the needs and challenges of diverse industries.

"Orion Enterprise is aimed at assisting set-ups across finance, manufacturing, sales, supply chain management, retail, contracting, auto dealership management and human resource & payroll management," the 3i InfoTech President (Middle East, India, APAC & Africa Markets), Mr Pankaj Chawla, said.

Source: http://www.thehindubusinessline.com/industry-and-economy/info-tech/3i-infotech-unveils-new-orion-enterprise-solution/article2090645.ece?css=print

Self Assessment

Fill in the blanks:

6. ..... refers to the flow of materials, information, payments, and services from raw material suppliers, through factories and warehouses, to the end customers.
7. The function of ..... is to plan, organize, and coordinate all the supply chain's activities.
8. Most ERP ..... have SCM modules so doing an ERP project may be a way to kill two birds with one stone.

10.4 Benefits of ERP

Enterprise Resource Planning (ERP) integrates internal and external management information across an entire organization, embracing finance/accounting, manufacturing, sales and service, customer relationship management, etc. ERP links all the departments across the company into a single centralized computer system and serves. It is not so easy task to cover the entire company or organization in a centralized computer system. But ERP software combines various departments together into a single integrated system, so that the various departments can share information and communicate with each other very easily.

There are many benefits of ERP system, which are as follows:

1. ***Ease of data access with data integrity:*** ERP enables user to access real time organizational data in a hassle free manner. People will not have to depend on the different department to access important data and derive organizational trend. All departments can access every data independently: like stock data, payable, retrieval, sales margin, production status, material work in progress status, delivery due date, delivery address, customer, and supplier design document, etc.

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Data integrity means to ensure correct data in the data base. There are many ways through which the integrity violation may occurs, like one employee entered wrong data/ information, software problem, etc. There are many way to stop the redundancy: some of these are backing up data in another place, controlling the access of data with the security system, using error detection technique, etc. ERP control the unauthorized access of data and everything to protect data integrity.

2. ***Reduces data redundancy:*** Data redundancy means some data are kept in the multiple locations or some data can be derived from other data. Duplicate information typically hampers the total system. ERP enables to reduce data redundancy. Through ERP a company can easily stop to store duplicate data in their system. When the company look that there is a redundancy, then they can change it very easily.

3. ***Activity monitoring reduces Sabotages:*** ERP keeps track of all the change logs that are made by an employee in an organization. If someone sabotages and changes the data in some place then it may affect everywhere in the system.

Example: Let us think of a company that manufactures steel and sells it to different companies. Now, if some employee changes the unit price of any item from 1 rupee to 50 paise, then the same will be reflected in the total system. It is virtually impossible to remember each and every item and its corresponding price. If this occurs then the company looses 50% of money on that particular item. But using ERP the company can monitor every change through logs. Hence, if someone tries to sabotage data, through ERP we can easily recognize that person.

4. ***Reduces time:*** The time factor is one of the most important part of an ERP system. ERP reduces a huge amount of time for an organization. In the manual system, each and every department is dependent on pen and paper work, so it can take a huge amount of time. ERP reduces per activity time because there is no data redundancy and all the data are easily accessible, so the data availability is very high. ERP reduce time for each and every department.

   - *Making Invoice:* When a customer orders some item to a company, the accounts department makes the invoice and sends it to the customer.
   - *Purchase:* ERP helps to generate the order for a particular item. It helps to search the suppliers, so that company can easily find the supplier's name, who supplies the item. Also it is easy to return the item to the supplier if there is any dispute with it. ERP makes low quotation in this competitive market. ERP also tracks who can supply the product within time and who can't. ERP helps the company to dispatch the product timely. The availability of the stock is also maintained by the ERP software. By this the company can reduce the over consumption, maintain minimum and maximum stock level. Suppose a company/organization wants to generate 300 work order manually. Each employee make one work order in one hour and the working hours for the company is 8 hours/day. Then one employee can make 8 work orders in a day. Now if the organization wants to make 300 work orders in a day then the company must need minimum of 38 employees. But using ERP the employee can generate a work order in one minute. Hence for making 300 work orders it takes 300 min. in this way ERP can save huge amount of time and revenue also. To generate 300 reports in manual way company has to recruit 38 employees, and pay their salaries. Using ERP one employee can perform work of 38 employees and the company pays only one person for doing this type of work. So the company makes the profit.
   - *Manufacture:* BOM (bill of materials) creation needs human elegancy and experience. If there is an existing valid BOM is available, and any product to be sold, then ERP

Notes

significantly reduces the productions planning time, material planning time and also work order time. From the previous BOM the company makes everything which is required for manufacturing the product through ERP.

- ***Store:*** ERP reduces the time taken to know the inventory level and the inventory valuation during the inventory audit. ERP reduces the time taken from material movement and material traceability. It means tracking which item can be used for which purpose and who can take which item. If it's not returned in proper time then the company charge that parson / department for that particular item. ERP reduces to make material requisition slip. If a customer orders for 1000 items, then it is easier to generate requisition slip through ERP, because ERP stores it when it is made for the first time. It also makes Goods Receipt Notes. Company can make Delivery Challan or Delivery Order for sales and job work.

5. ***Unaccounted Inventory loss:*** Any company which is working through pen paper, they tend to face high amount of inventory losses, as it is not possible to memorize each and every item which is there in the store. If the company uses ERP they can stop the unaccounted inventory losses. And it is seen that the company who don't follow the ERP has at least 2% inventory loss over the inventory valuation where it is very easy to reduce it to less than 0.5 % using ERP. Through the ERP the company can easily keep track of the items which are in the store. The company can easily track who is responsible for which item and the purpose also. In this way the company can easily protect the unaccounted inventory loss.

6. ***Ease of sales planning:*** Sales planning help the company to quote competitively in the complex market environment. Normally the quotation is done by raw materials cost multiplied by overhead cost. And ERP calculate both the things easily, more effectively and more accurately. Company can calculate overhead cost of the materials, overhead time very easily using the ERP. Through ERP software a company can quote more competitive rates than the other company. So it increases the possibility that they win the tender and after bagging the tender it reduces the possibility that they end up making loss. ERP reduces the winner's curse by a huge margin.

7. ***Over consumption:*** Because people are more accountable they tend to be more careful and the accountability comes from monitoring any extra usage of raw materials or consumables during production. ERP reduces over consumption during the production. Through ERP the company knows the inventory level of the store. So it is easier to purchase or produce the material as per requirement. It also reduces the misuse of the raw materials during the production which means the production department uses the exact amount which is required during the production. ERP reduces 3% of material consumption easily. It also increases the growth of the learning curve.

Caution People tend to be very careful when the companies produce any product during their work.

8. ***Strong organizational process:*** Through ERP any company can make strong organizational process. ERP focuses that the companies follow few industry best practices. ERP ensure the company is on time for the full delivery. There are different strategies used by the different companies to grow up their business. Some basic rules are

   - Just In Time (JIT)
   - SCRUM
   - Getting Things Done (GTD).

Just In Time (JIT) strategy basically started by Motorola. After that this techniques is adopted by all the Japanese company and the success of 'TOYOTA' is the bench mark of JIT in the world. The fundamental concept of JIT is retrieving any material exactly you needed or you produce the product at schedule time.

ERP reduces the inventory level, inventory ideal time. Each and every item are easily traceable as per production lots, stock moves, etc. Through ERP a company can understand the inventory level and ERP can reduces inventory holding cost.

ERP forces small companies to adopt industry base practices.

Task Explain the concept of Just In Time (JIT) strategy.

9. ***Better CRM:*** Customer Relationship Management (CRM) is the one of the important part of any business organization. Basically it includes marketing, customer service and technical support. ERP provide more ways for better customer relation with companies. ERP can store every data of a company. So if any customer loss any data accidentally, the company provide can each and every thing which a customer required. Service after sales creates a better Customer relation. Through after sales service only company can collect feedback about their product. If there is any failures or changes required then company can easily handle it. So in this way any company (using ERP) creates a better relation with their customer.

Self Assessment

State whether the following statements are true or false:

9. Data redundancy means to ensure correct data in the data base.
10. Data integrity means some data are kept in the multiple locations or some data can be derived from other data.
11. The fundamental concept of JIT is retrieving any material exactly you needed or you produce the product at schedule time.
12. Any company which is working through pen paper, they tend to face high amount of inventory losses.

10.5 ERP Issues

Fundamentally, ERP is an attempt to consolidate all the data and processes of an organization into an integrated system. Typically, ERP system uses multiple components of computer software and hardware to accomplish the integration.

The most important issue for ERP implementation is speed as the quicker the implementation, the better the delivery and benefits in terms of outcomes. Further, the returns can be expected at a shorter term. The important thing is the knowledge of the components of enterprise resource planning. Just to define enterprise resource planning is not enough.

The order of business in many companies today, shows sharp deviance from the conventional practice. The process reengineering, which was formerly popular with business, played an important role with respect to implementation. This has actually resulted in a gap between the existent results and those predicted by the process of foreseeing. The ERP system has been tuned sufficiently in order adjust with the company affairs.

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Even with the improvements, there remains a question on the manner in which the companies have gone ahead with ERP implementation. Some of the companies just do it even without following systematic procedures. There are various issues relating ERP implementation that companies need to understand in order to increase the success rate of the ERP project. Over the years, whole process of ERP implementation has been considerably modified. Not only the technology, there are other issues, which need to be addressed by the companies.

Some of the vital ERP implementation issues like 'Requirement for innovating new software applications', 'Probability of undulation in the choice of technology', 'Popular information systems – this takes into account the probability', 'The capability of the market players to cope up with ERP', 'The different mode and means essential for implementation of a business applications like ERP', 'Exploit the ERP to benefit from the same and gain a competitive edge' and 'The services and usage' must be address by the companies.

The above issues are important and help in deciding the business model of the company. The organization should consider the above facts and cover the issues before making a decision on incorporating ERP.

The ERP implementation has certain aspects, which makes crucial in the process on ERP. This is why understanding ERP implementation issues are so important for whole implementation of the ERP project.

Did u know? ERP implementation issues are components of ERP solution, which revolutionizes or updates the company's products and services.

There should be smooth flow of information and data among the different parts of the project's main concern. The ambit of the project is wide and it encompasses some complex ideas, which require planning and execution.

Other factors that influence the way ERP implementations are normally controlled by the professionals. The success of the ERP implementation depends to larger extent on the commitment from top management. So, the ERP project needs transparent communication with the top-level executives.

Another important ERP implementation issue is the reengineering concept that is transforming the actual business into something that would yield much more returns to the company or owner. The ERP systems are based on the practices that are best in the industry. Before implementing an ERP the company must ensure that any other procedure that is used must be adapted to the original ERP implementation concept.

Some of the other issues associated with ERP implementation include the issues of integration, searching for ERP consultants, implementation deadlines and the implementation costs.

Caution Companies seeking ERP should necessarily understand that simply ERP planning is not enough for ensuring benefit of ERP.

It is imperative to implement ERP as planned after conceiving the concept of enterprise resource planning.

Self Assessment

State whether the following statements are true or false:

13. ERP does not consolidate all the data and processes of an organization into an integrated system.

Notes

14. The process of reengineering, which was formerly popular with business, played an important role with respect to implementation.

15. ERP implementation issues are components of ERP solution, which revolutionizes or updates the company's products and services.

Case Study

How Ramco Changed the Dynamics of Adani Logistics

The Adani Group, (1988) is one of India's fastest growing business houses. From a trusted trading house, today the group has become a global conglomerate with diverse ventures. One of its flagship ventures is its integrated logistics solutions division, Adani Logistics Limited (ALL). With an all-India licence to manage container train operations on Indian Railways, ALL provides pan-India multimodal logistics service for movement of goods in containers by train, road and sea. Not just moving containers, ALL also develops logistics parks which provide ground facilities including aggregation, warehousing, holding, inspection, custom bonding, stuffing/destuffing of EXIM and domestic cargo and loading/unloading of cargo.

Offering end-to-end logistic solutions for handling different kinds of cargo including containers, break bulk dry and liquid cargo, perishables and project cargo, ALL offers full container, full train load and less than a full container load services.

Adani Looks to Streamline its Functions

As India's first private container train operator to have its own inland container depot with a capacity to handle up to two lakh twenty foot equivalent units annually, Adani has its Logistics Park spread over 750,000 sq meters with a bonded warehouse of 5000 sq meters, two railway lines, three electronic weigh bridges and container repair facilities. For such a large, widespread operation, their constant challenge was in integrating their road, rail and sea operations, especially in the light of the huge quantity and frequency of transactions.

Their second challenge was the lack of an efficient system to track consignments which often resulted in extra work for the staff to track delayed shipments. This was also affecting long-term customer relationships.

Their third challenge had to do with consignment rehandling. As it happens, at container terminals, several activities continuously take place, i.e. arrival of a ship (train or vehicle), unloading and then reloading the carrier, transportation of containers from the terminal to a warehouse where containers are stacked for disbursement. The quality of information prior to arrival of a consignment and post arrival has serious cost implications. For example, optimising carrier space would mean more earnings than having a half capacity carrier as the operational costs involved in transportation remain fixed immaterial of the size of the load. Not having a seamless integrated system with updated consignment information in real time was another challenge.

The operations staff, the warehouse, the logistics people used FoxPro and Excel sheets to capture data which was then e-mailed or faxed. This resulted in delays as well as version control problems. Documents related to consignments would also be lost or misplaced during transactions.

Contd.....

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Ramco Creates a Flat World for Adani

Adani wanted an Enterprise Resource Planning software which would seamlessly integrate its multi locational operation and provide information, in real time, on its carriers. It wanted a next-generation trace and track system which would ensure that carrier space was optimised at all times resulting in cost benefits as well as improved customer relationships. Senior management at Adani also wanted to be kept abreast of information and wanted an ERP which would provide them business intelligence and data in real time on their logistics business. With future expansion plans, the system should have the capability to expand without them having to invest in anything new.

Their people were efficient in their areas of expertise and they were used to storing information in Excel sheets and databases. The ERP had to 'talk their language' and not be too technical to ensure that the staff felt comfortable using it. As time is equivalent to money in the logistics business, they were looking for a quick solution to all their challenges.

Domain Knowledge Dominates

After evaluating some of the world's leading ERP solution providers, Adani chose to partner with Ramco for its end-to-end knowledge about the shipping and transportation industry segment.

Ramco's knowledge of the domain was a result of extensive research into the behaviour and business models of logistics providers. It understood the fact that more and more businesses were literally offloading a large part of their business operations onto logistics providers to eliminate major infrastructure investments even as they experienced improved agility in a dynamic market place and access to world-class processes all at reduced operating-costs.

Adani's management was impressed with Ramco's expertise and knowledge in their industry space. The attention to detail and thorough knowledge of this space convinced ALL that Ramco would offer a solution which would be tailor-made for their business.

Adani Experiences Smooth Sailing

Having understood the dynamics of this business, Ramco had an advantage over other solution providers by being the only one to offer an exclusive Logistics and Transportation solution which is designed to address the expanding array of services offered by these companies.

Based on Ramco Virtual Works, Ramco 3PL and Transportation provides companies with the flexibility they need to rapidly respond to evolving corporate imperatives, regulatory changes, and market conditions.

Rather than redeploy enterprise systems as the company reacts to these changes, the underlying platform can leverage business process models to quickly compose new business assets for true "change on demand".

Ramco's solution is comprised of:

- Inbound Logistics
- Outbound Logistics
- Warehouse Management
- Vehicle Management
- Inventory
- Human Capital Management

Contd.....

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Size Matters and so Does Cost

Reduced Costs

With Ramco's solution Adani could cover all its core business processes of container terminal management for their container yards across the country. This provided greater efficiency and transparency in its operations with a high degree of automation coupled with container tracking. The solution covered areas such as yard plan-ning, terminal operations, transportation, train planning and container consolidation and warehousing and translated into an ongoing cost savings of 27%. Container rehandling was another area which immediately experienced cost benefits of more than 15% by reducing material and manpower expenses. Adani's warehousing facility, which was a key income generator, could now be efficiently optimised to ensure that the warehouse capability was utilised to a maximum.

Increased Efficiency

The system's capacity to generate varied reports ensured that all the people in the operations had a constant update on their own functions as well as how it interlinked and affected other functions. This ensured that the supply chain links worked to maximum efficiency and immediately highlighted breaks in the chain if and when they happened so that corrective action could be immediately taken.

Transparency

The solution helped Adani to draw all its disparate processes together to give the company instant access to information and valuable insights into their business.

Question

Analyse how the ERP solution helped Adani in:

(a) instant availability and accessibility of information at all processing desks.

(b) reduction of processing & documentation time/paperwork.

(c) better cargo & space management.

(d) fast and efficient load/discharge operations.

(e) improved productivity.

Source: http://www.ramco.com/downloads/CS-Adani.pdf

10.6 Summary

- Enterprise Resource Planning (ERP) is an enterprise-wide information system designed to coordinate all the resources, information, and activities needed to complete business processes such as order fulfilment or billing.
- The term ERP originally referred to how a large organization planned to use organizational wide resources.
- CRM means "customer relation management." which is software designed to manage all customer interactions in an organized way.
- Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems are the two of the most popular business systems, sharing some common features but differing in most.

Notes

- The function of Supply Chain Management (SCM) is to plan, organize, and coordinate all the supply chain's activities.
- Enterprise Resource Planning & Supply Chain Management is a formal method to effectively plan all the resources in the business enterprise.
- Enterprise Resource Planning (ERP) integrates internal and external management information across an entire organization, embracing finance/accounting, manufacturing, sales and service, customer relationship management, etc.
- There are various issues relating ERP implementation that companies need to understand in order to increase the success rate of the ERP project.

10.7 Keywords

BOM: A Bill of Materials (BOM) is a list of the parts or components that are required to build a product.

CRM: CRM means "customer relation management." which is a software designed to manage all customer interactions in an organized way.

Data Redundancy: It means some data are kept in the multiple locations or some data can be derived from other data.

Entrepreneur: An entrepreneur is an individual who accepts some sort of risk usually financial in the pursuit of new ventures.

ERP: Enterprise Resource Planning (ERP) is an enterprise-wide information system designed to coordinate all the resources, information, and activities needed to complete business processes such as order fulfilment or billing.

HRM: Human Resource Management (HRM) is the function within an organization that focuses on recruitment of, management of, and providing direction for the people who work in the organization.

SCM: Supply Chain Management (SCM) plans, organizes, and coordinates all the supply chain's activities.

Supply Chain: Supply chain refers to the flow of materials, information, payments, and services from raw material suppliers, through factories and warehouses, to the end customers.

10.8 Review Questions

1. Explain the concept of ERP with example.
2. What is customer relation management? Illustrate how CRM is becoming a vital part of ERP.
3. What is the function of supply chain management? Discuss.
4. Discuss the relationship between ERP and SCM.
5. Many SCM applications are reliant upon the kind of information that is stored in the most quantity inside ERP software. Comment.
6. What are the advantages of ERP system? Discuss.
7. What are the different strategies used by the different companies to grow up their business? Discuss.

Notes

8. Describe the various issues related to ERP that companies need to understand to increase the success rate of the ERP project.
9. How ERP keeps track of all the change logs made by an employee? Discuss.
10. Make distinction between CRM and SCM.

Answers: Self Assessment

1.	ERP	2.	Software
3.	data store	4.	CRM
5.	Entrepreneur	6.	Supply chain
7.	Supply Chain Management (SCM)	8.	Vendors
9.	False	10.	False
11.	True	12.	True
13.	False	14.	True
15.	True		

10.9 Further Readings

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Unit 11: Enterprise Resource Planning – II

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Objectives

After studying this unit, you should be able to:

- Explain the process of ERP system implementation
- Discuss different stages of ERP implementation
- Define the concept of ERP best practices
- Discuss critical best practices of ERP
- Recognise various trends of ERP

Introduction

The term Enterprise Resource Planning (ERP) was used to describe the planning of a large organisation to manage its organisational resources. The uses of ERP systems were restricted to the larger industrial companies. Over the years, the use of ERP has greatly changed and has grown to be extremely comprehensive. ERP implementation can be defined as the installation of a software package that integrates all data and processes of an organisation into a unified system. These software are cross functional and enterprise wide system that handles manufacturing, HR management, order entry, accounts receivable, and payable general ledger, purchasing, warehousing, transportation, etc. for an organisation. Picking the best practices to implement ERP helps all size businesses regardless of size to achieve what their organisation is missing for implementation. The scope of this unit is to highlight the best practices about implementing ERP in any organisation; this is because most of the ERP implementation fails due to the fact that they either go over budget, over time and/or lose the focus of the business.

11.1 ERP System Implementation Process

ERP can be defined as an integrated, multi-module system that assimilates all the data and processes of an organisation into a unified system. To attain this goal, it is essential to strike a successful combination of both hardware and software and that at times make the process of ERP

implementation intimidating. Proper ERP implementation follows certain guidelines that can help people to organise their own rules for better implementation of the technology.

11.1.1 The Prior-implementation Stage

A decent plan must be drawn out before executing the ERP system. There has to be specific goals to attain and you must test the capabilities of your ERP project before going for the real thing. Also, do not forget to collect the required resources before going for project implementation. Resources mean not only the equipments but also the skills needed to make things happen. An important aspect of planning is projection and always remember not to over-project, especially in areas of finances and costs.

If you are planning to hire a third party consultant for the implementation procedure, then you need to completely trust the person who is implementing the system and let him have high security access to the ERP hosting server. Another important thing is the evaluation of the project in order to ascertain the effectiveness of the product. This evaluation report is not only necessary for improving the standards in ERP execution project but also serve as important information to the clients. Several researches have shown that flawed implementation of ERP have resulted in severe problems of the company, right from litigation to misinterpretation in business media. Thus, the implementation phase is very important.

11.1.2 Various Stages of ERP Implementation

The process of ERP implementation should be carried on by a group of trained and competent personnel in order to ensure perfection, accountability and transparency. In reality, very few companies succeed in their first attempt of ERP implementations. Actually, it is very essential to implement the necessary changes in the organisation to combat ERP.

Another thing you need to remember is that ERP is not an answer to errors in business plans and tactics but it is an I.T. tool that assists and facilitates the business process by being a part of it. ERP gap analysis and business process re-engineering should be performed properly, too. IT facilities in the business should be at par with market trends and international reputation. This will permit the operation people to constantly adapt and update as and when it is necessary in order to adjust with the competition. In fact, ERP should become a part of your daily routine. The varied stages of ERP execution include Pre-evaluation Screening, Evaluation Package, Project Planning, GAP analysis, Reengineering, Team training, Testing and Post implementation.

Notes The process of ERP implementation is actually referred to as life cycle. Selection of an ERP package needs a thorough analysis of the various aspects. This usually involves choosing a few suitable applications for the company from an assortment of vendors.

There are different stages in which the ERP system is implemented. The stages of the ERP life cycle process are discussed as below:

1. ***Pre-screening of the chosen packages:*** A team of experts with specialised knowledge in the field is made to study the basis of different parameters. The experts perform tests to determine whether the package is apt for the range of application in their field. Further, they ascertain the level of coordination that the software would be able achieve in working with different departments. This plainly means that they ensure whether the various departments would offer an increased output due to ERP implementation.

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2. ***Preparing for the venture:*** The implementation of ERP is defined this stage. The conditions and regulations to meet are also decided. This is done by a team of officers, who reports to the highest authority in the hierarchy of the organisation.

3. ***Project planning:*** This is a crucial stage where the implementation process is designed. In this phase the details of the implementation is worked out. The deadlines and the time-schedules are also decided. A plan is chalked out, roles are allotted and responsibilities are assigned. The date for starting the project is also decided. The planning is done by a committee of team leaders.

4. ***GAP analysis:*** This is a stage in which the company identifies the gaps that needs to be traversed to make the company's practice in sync with ERP environment. However, this process involves huge expenses, yet it unavoidable. The team decides on restructuring of the business made on the basis of GAP analysis.

5. ***Designing the System:*** In this stage, a lot of microscopic planning and deliberate action are carried out. The step helps to decide and resolve which areas is important for restructuring. It is chosen from the ERP implementation models.

6. ***Reengineering:*** ERP implementation involves an evident change in the number of employees and their job responsibilities, which results due to a more automated and efficient system. The human factors are taken into account in this stage.

7. ***Team training:*** This stage is all about preparing the employees to use ERP. The employees in the organisation are trained to handle the system on daily and regular basis.

8. ***Testing:*** The phase is marked by attempts to break the system. At this point, the company tests the real case scenarios. The system has been configured, now only extreme cases like system overloads, hackers trying to access restricted areas, multiple users logging on at the same time, users entering invalid data, are addressed. This phase is performed to find the weak links, which could be rectified before implementation.

9. ***Post implementation:*** Finally, the process of implementation would be complete when there is a regular follow up and proper instruction flow thereafter and along the lifetime of ERP. This involves the entire efforts and measures taken to update and attain better benefits, after the system is implemented.

Caution The organisations should ensure that the ERP implementation process should be smooth and safe.

Task Make distinction between prior-implementation stage and post-implementation stage of ERP.

Caselet

LMW to Implement ERP Package

LAKSHMI Machine Works (LMW), a leading player in textile machinery manufacturing in this part of the country, has embarked on a strategic IT initiative with the implementation of enterprise resource management (ERP) solutions.

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The project - e-vistaa - is expected to be completed in about a year's time, with the basic ERP modules rolling out in about nine months from now.

This IT initiative, according to Dr. D. Jayavarthanavelu, Chairman, LMW, would be on a three-tier architecture with the central database and application server. Development and testing works are to be carried out in a separate server.

While the central hub is being located at LMW Unit I at Perianaickenpalayam near here, other production units are to be linked to the main hub through WAN (Wide Area Network).

For initiating the e-transformation exercise, LMW has chosen Oracle 11i footprint, which is an end-to-end business suite. The global software service provider, TCS, has tied-up with LMW as its ERP implementation partner.

Source: http://www.thehindubusinessline.in/2002/05/28/stories/2002052800690700.htm

Self Assessment

Fill in the blanks:

1. The process of ..... is actually referred to as life cycle.
2. The ..... of the project is required in order to ascertain the effectiveness of the product.
3. In ..... phase, the details of the implementation are worked out.
4. ..... is a stage in which the company identifies the gaps that needs to be traversed to make the company's practice in sync with ERP environment.
5. ..... phase is marked by attempts to break the system.

11.2 ERP Best Practices

Enterprise Resource Planning systems are based on so-called best practices. One of the definitions of ERP is "the amalgamation of world-class (best) practices together".

It is said that, if ERP is implemented successfully, the company automatically becomes world class in terms of its practices. This statement is true for most of the ERP products.

Right from the industrial revolution and even further, we can see the efforts put in to improve existing practices. Typically, the classical industrial engineering principle says: there is always a better method available than the existing. Here the 'better' ultimately means improved efficiency, effectiveness and economics. This principle clearly supports the view that nothing is the best forever.

In this context, let us see what the best practice in ERP environment is. ERP assumes the fundamental set-ups as "Pillars of ERP". The best practice in ERP then can be defined as the utilisation of these set-ups to the maximum possible to produce the desired performance in terms of customer focus, zero waste of all the resources, and value creation. Tangibly, it leads to increase in quality and service, and reduction of cost and response time.

ERP enjoys having a strong skeleton based on these best practices. All the workflows in ERP are so thoughtfully maintained that it ensures that the user automatically follows the best practice. It won't allow the user to bypass or modify the pre-determined course of actions that may create non-value added activity.

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Now, we will discuss some best practices when implementing them. When choosing to implement a new ERP system, it is extremely important to consider all the inherent risks that will arise throughout the process. Implementing an ERP system will affect multiple people, groups, stakeholders, and business processes in your organisation.

Did u know? Any project, software-related or not, that deliberately crosses organisational boundaries is ripe for potential complexity and risk.

There's no getting around the fact that ERP deployment is a major undertaking, but the process doesn't have to be painful. With proper planning and execution, implementing an ERP system should be a smooth process and quickly improve efficiency across your business.

Here are some critical ERP implementation best practices to consider when selecting and deploying a solution.

1. ***Define clear goals and objectives:*** Make sure you clearly define what your organisation is looking to achieve with implementing a new ERP system. An ERP system will affect many departments and business processes throughout your group. Making sure you clearly define what objectives, needs and deliverables each group within your organisation is looking to achieve will help better ensure the system you choose is capable of effectively achieving the overall goals.

2. ***Select the Best ERP Implementation for Your Business:*** Given the range of functions that ERP encompasses, it should come as no surprise that there are multiple types of ERP implementations. You can choose to build your own custom ERP and program it from the bottom up, though the cost and complexity of taking on such a huge project can make a do-it-yourself approach a poor one.

   Or you can purchase on-premise ERP software and install it on your company's computers and servers. Before investing in an on-site ERP solution, however, consider this sobering fact: Two-thirds of mid-size businesses are running old versions of their ERP software. Why the lag? Organisations often decide that the pain required to re-implement incremental releases is too great – especially since each upgrade means the business risks losing critical customisations and integrations. Keeping ERP technology current is key to maximising its potential, so it's essential to choose a system deployment option that's easy to update and will preserve custom features.

   There's a third alternative: a cloud-based ERP solution like NetSuite. Because the system is cloud-based and managed entirely off site by the ERP provider, a cloud-based solution means you don't have to make expensive upfront investments in IT hardware and servers, nor worry about dedicating significant personnel resources to managing it. In addition, cloud-based implementations are usually much faster and easier to deploy than on-site deployments, and maintenance is much easier since the cloud-based ERP provider is responsible for keeping the technology up to date. Most importantly, with cloud technology, product enhancements are painless – customisations and integrations automatically update with system upgrades – so you can always be assured that your business is running with the most advanced capability.

3. ***Choosing the right software:*** To gain full value from an ERP system, you must match the software to your organisation's information needs, processes, functional requirements, and workflows. Consult various vendors and ensure that the ERP system you are sold can truly fulfil your needs.

4. ***Prepare for business transformation:*** ERP is fundamentally about changing, or transforming, information flows through an organisation. By definition, therefore, both

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roles and processes are likely to change during the ERP implementation. Many projects neglect the need to devote time and resources to change management ensuring that a clear process is defined and implemented to help workers through process of change from the old system to the new.

5. ***Training and Support Resources:*** A new ERP system will need highly qualified consultants experienced at implementation and training. Make sure the vendor you choose has consultants readily available to train and support your staff on the daily use of the system and any problems and questions that could arise. Also make sure that there is a clear training program defined for new hires and is supported by the ERP software company.

6. ***Clear Implementation plan and timeline:*** A crucial part of implementing an ERP system is deciding the exact steps of how it will be done and when. Make sure all affected departments in your organisation are consulted as to when the best time it is to implement the new system.

Example: Choosing to implement an accounting ERP system at year-end accounting closing would be a bad decision.

Making the cut over to a new system in the most crucial periods of business is not a good decision.

7. ***Get Executive Buy-In and Build Consensus around ERP Implementation:*** Getting buy-in from company executives means more than just getting a signature to approve investment in an ERP solution (though that is certainly important); it means educating leadership about what ERP implementation means for the company. More than just software, ERP technology can transform the business, an idea that executives must support before moving forward with any deployment effort. Frequent communication from executives about ERP implementation plans and changing processes are vital to helping build consensus—and even excitement—across your company

8. ***Set Realistic Expectations for ERP Implementation:*** ERP software is powerful technology that can streamline processes, improve visibility, reduce costs, and completely change the way that your company does business—but it won't happen overnight. ERP solutions encompass many complex front- and back-office systems, from accounting and inventory management to ecommerce and CRM, which need to be integrated to create a seamless experience for end users.

Caution This takes careful planning and time to execute.

To accelerate the implementation process, make sure your project is scoped appropriately and consider working with an experienced, knowledgeable ERP expert. The average customer is typically able to implement its ERP system within three months — much less than the on-premise ERP implementation industry average of a year and a half.

9. ***Focus on Staff Resources and Strong Project Management:*** Before starting any ERP implementation, make sure that your company has the staff resources in place to see the project through to completion. This may seem like an obvious point, but many companies begin deployment without resourcing it adequately, resulting in overworked, unhappy employees and a less-than-optimal installation.

Identifying a dedicated project leader and a team for your ERP implementation will help ensure that the project goes smoothly. For ERP team members, consider reassigning or removing some of their normal job duties so they have enough time to concentrate on the

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task at hand. Identify a team leader with strong project management skills who can facilitate team communication, address any issues that may arise, and keep the implementation on schedule.

Keeping these best practices in mind will help you launch your deployment on the right track and keep it there throughout the entire process. Researching the best ERP implementation option for your business, building consensus around the effort, setting realistic expectations, and giving your staff the support they need — these steps take more time, but they result in a more effective ERP experience and a better-run business in the long term.

Self Assessment

State whether the following statements are true or false:

6. The best practices in ERP lead to increase in quality and service, and reduction of cost and response time.
7. Cloud-based implementations are not easier to deploy than on-site deployments.
8. Identifying a dedicated project leader and a team for your ERP implementation will not ensure that the project goes smoothly.
9. A crucial part of implementing an ERP system is deciding the exact steps of how it will be done and when.
10. Before starting any ERP implementation, make sure that your company has the staff resources in place to see the project through to completion.

11.3 ERP Trends

Today, ERP is still evolving — adapting to developments in technology and the demands of the market. Four important trends are shaping ERP's continuing evolution: improvements in integration and flexibility, extensions to e-business applications, a broader reach to new users, and the adoption of Internet technologies.

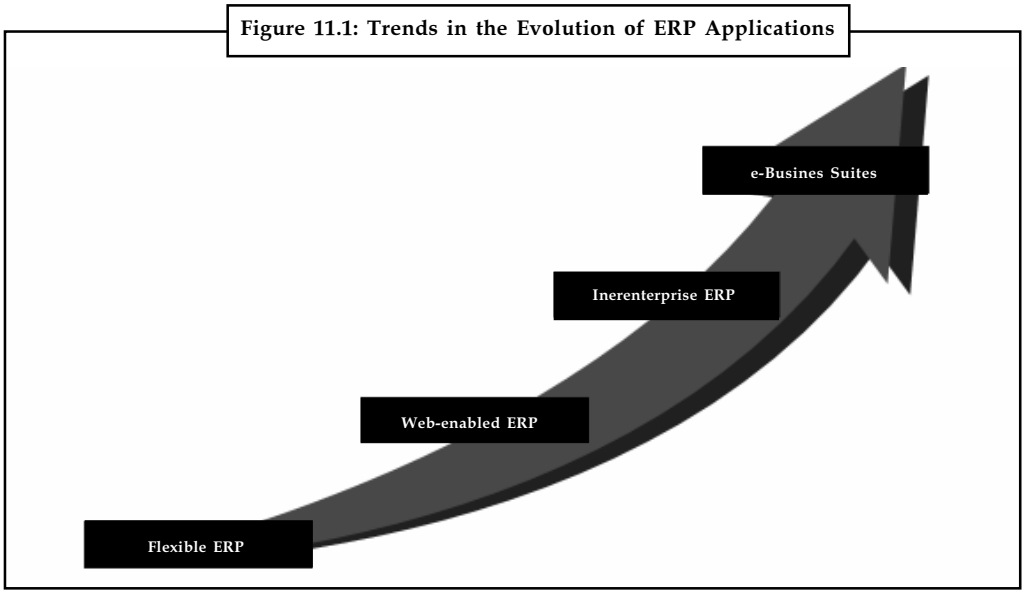
Figure 11.1 illustrates four major developments and trends evolving in ERP applications. First, the ERP software packages that were the mainstay of ERP implementations in the 1990s — and were often criticised for their inflexibility—have gradually been modified into more flexible products. Companies that installed ERP systems pressured software vendors to adopt more open, flexible, standards-based software architectures. This makes the software easier to integrate with other application programs of business users, as well as making it easier to make minor modifications to suit a company's business processes.

Example: SAP R/3 Enterprise, released in 2002 by SAP AG as a successor to earlier versions of SAP R3 is an example. Other leading ERP vendors, including Oracle, PeopleSoft, and J. D. Edwards, have also developed more flexible ERP products.

Web-enabling ERP software is a second development in the evolution of ERP. The growth of the Internet and corporate intranets and extranets prompted software companies to use Internet technologies to build Web interfaces and networking capabilities into ERP systems. These features make ERP systems easier to use and connect to other internal applications, as well as the systems of a company's business partners. This Internet connectivity led to the development of inter-enterprise ERP systems that provide Web-enabled links between key business systems (such as inventory and production) of a company and its customers, suppliers, distributors and others. These external links signalled a move toward the integration of internal-facing ERP applications

with the external-focused applications of Supply Chain Management (SCM) and a company's supply chain partners.

Figure 11.1: Trends in the Evolution of ERP Applications



Source: http://highered.mcgraw-hill.com/sites/dl/free/0070909636/125778/OBrienCh6.pdf

All of these developments have provided the business and technological momentum for the integration of ERP functions into e-business suites. The major ERP software companies have developed modular, Web-enabled software suites that integrate ERP, customer-relationship management, supply chain management, procurement, decision support, enterprise portals, and other business applications and functions.

Example: These include Oracle's E-Business Suite and SAP's mySAP. Some e-business suites disassemble ERP components and integrate them into other modules, while other products keep ERP as a distinct module in the software suite.

Of course, the goal of these software suites is to enable companies to run most of their business processes using one Web-enabled system of integrated software and databases, instead of a variety of separate e-business applications.

ERP and related applications are improving continuously especially in the last decade. Even though there was an economic downturn in the later half of the decade, companies were keen on implementing ERP applications and solutions in order to reduce their expenses in the long run and to ensure efficiency of their operations.

Notes Integrating all the process across various departments helps companies avoid redundant work and in turn reduces the operational expenses. It also helps the company in the long run, by helping with accurate data to analyse and project for the future.

Here are some other rising trends in ERP applications and Software we have been noticing this decade:

- ***SMB Segment:*** Small and Medium Businesses (SMBs) are growing at a much faster rate in the digital age. Thanks to the ability to build applications on the cloud – a lot of minor tasks across business verticals can now be handled through applications and this has

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increased the growth rate of SMBs on par with global standards. More and more SMBs are implementing ERP solutions at the earlier stages of their growth to ensure process efficiency. Regulatory pressures from some of the Governments and mandates by outsourcing clients are also reasons for SMBs adopting ERP solutions.

- ***Micro Verticals:*** So far, some of the large players were banking on integrating logistics, financials and HR processes into their ERP. Nowadays, these are not considered to be differentiators as they are mandated by the clients implementing ERP solutions. Some of the niche players are concentrating on providing specialised ERP solutions and applications for micro verticals or processes within processes.
- ***Staff Training:*** A Lot of companies are investing in training their employees to effectively use ERP tools and tactics. Previously this was not the case. Due to the advent of Cloud based applications, staff now can access Ondemand ERP from anywhere through thin clients like mobile/iPad/laptop etc. This has made companies to invest a little more amount in training the staff to utilise ERP solutions in order to get real-time inputs.
- ***User Friendliness:*** Keep it Simple is the keyword for the decade. Present day ERP applications are becoming more and more user-friendly and anyone can utilise it with minimum training.
- ***Social Media Integration:*** Social Media revolution in the later half of the past decade, has forced companies to integrate Social media into their ERP applications and software. There are two ways this has been done – One of them is to create an interface or Social Media plug-in that operates independent of any outside service. The second method is by linking ERP software with Social networking sites, exposing not-so-sensitive info and data. Microsoft has already infused its product line with Microsoft Dynamics and Sharepoint Integration. The main objective is to collaborate. Lot other companies are integrating their ERP applications with their internal social networking sites or other intranet sites. These are just few and there are a lot more under Research.

Did u know? ERP solution providers are still working on improvising ways in which companies can mobilise their workforce through various applications with utmost efficiency.

Task Make distinction between web-enabled ERP and inter-enterprise ERP.

Self Assessment

State whether the following statements are true or false:

11. Integrating all the process across various departments does not help companies to avoid redundant work and in turn reduces the operational expenses.
12. More and more small and medium businesses are implementing ERP solutions at the earlier stages of their growth to ensure process efficiency.
13. Some of the niche players are concentrating on providing specialised ERP solutions and applications for micro verticals or processes within processes.
14. Present day ERP applications are not becoming much user-friendly.
15. Social Media revolution in the first half of the past decade, has forced companies to integrate social media into their ERP applications and software.

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Case Study

Oracle Implementation for a Global Electronics Conglomerate

The Client

The North American subsidiary of a global electronics conglomerate, the client enterprise has a revenue base of over US$ 1 billion dollars. It employs close to 1,000 people spread across multiple office locations with a very large number of warehouses. The parent company makes and markets semiconductors, display and storage devices for the computing, wireless, networking, automotive and digital consumer markets and is the third largest semiconductor company worldwide in terms of global sales for the year 2002.

Business Need

Creating value for customers by continuously improving business processes to deliver on time, every time is critical to driving growth. This is a big challenge for the client considering the nature of the industry, which works on extremely short lifecycles, and therefore an impeccable 'on-time delivery' record is a crucial success factor.

The legacy system, however, lacked the flexibility to enable its operations to absorb market fluctuations. Therefore, the need to implement a robust business process to keep ahead of competition, reduce overhead costs and improve cash flow. From a technology point of view, the diverse existing systems, built on heterogeneous technology platforms, had to be integrated.

Challenges

The key to success, however, depended in integrating disparate systems and achieving process efficiencies. The challenges were:

- Keeping pace with the competitor's reduced distribution times was tough and customer service enhancement was not easy either.
- Legacy systems of the client hampered the synchronisation of its operations with market fluctuations.
- As the customer is in an extremely short life-cycle industry, the 'on time delivery' record had to be improved while keeping inventory levels and costs low.
- The client was operating on disparate systems. A large number of satellite systems were being used that were not integrated with the host system.
- Operating on disparate systems added to the complexities, as there were a large number of satellite systems running independent of the host.
- The Infosys team had to integrate the new system with the satellite systems and put all new processes in place in a very short time frame.

The Solution

Equipped with its proprietary IntERPrize methodology, and strong Oracle Applications' consulting and its unique global delivery model, Infosys set about to integrate best-in-class Oracle ERP with custom applications to help the client improve their business processes. As part of this mandate, Infosys undertook the following:

- Evaluation and implementation of Warehouse Management System (WMS)/ Transport Management System (TMS) solution

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- Standardisation of performance metrics across the organisation to streamline the client's internal processes. Infosys was involved in business process definition, program management, project management, package evaluation, package implementation, key user training, and post-production support

Strategy

Leveraging the IntERPrize, a team of 45 experts from Infosys decided on the methodology and approach to implement the Oracle Application R11.0.3 to achieve process efficiencies. Infosys, using Oracle solutions, streamlined the manufacturing, distribution, procurement and financial accounting processes of the client. These were integrated with i2 Technologies' Demand Planner, a forecasting and planning tool. Also, a new enterprise WMS/TMS product from HK Systems was evaluated and implemented for improving order-execution efficiency, outbound visibility, and reverse logistics. (The applications of i2 Technologies and HK Systems run on Sun Solaris 5.6 and Windows NT platforms.) An enterprise-wide data model was prepared for standardising performance metrics across the organisation and streamlining the client's internal processes.

Benefits

Infosys completed the implementation in a record 18 months, which was 50% faster than the timeline given by competitors and reflected a significant increase in ROI for the client. Other tangible benefits included the following:

- The implementation imparted high visibility to the supply chain and improved demand planning and execution.
- There was a significant improvement in cash flow due to real-time processes. A large number of processes have been automated which has increased the efficiency and reduced overhead costs.
- The client witnessed significant improvement in its 'on time delivery' record due to the processes and applications implemented by Infosys.
- There was closer understanding of business processes, leading to continuous, incremental changes since post-implementation.
- A WMS/TMS package was evolved along with an Online Analytical Processing (OLAP) tool, which resulted in an improved integrated system.

Questions

1. What are the challenges companies' experiences in implementing ERP systems?
2. What are several key things companies should do to avoid ERP systems failures? Explain the reasons for your proposals.
3. Why do you think ERP systems in particular are often cited as examples of failures in IT systems development, implementation, or management?

Source: http://www.infosys.com/industries/high-technology/case-studies/Pages/oracle-implementation-global.aspx

11.4 Summary

- Enterprise Resource Planning (ERP) implementation can be defined as the installation of a software package that integrates all data and processes of an organisation into a unified system.

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- Proper ERP implementation follows certain guidelines that can help people to organise their own rules for better implementation of the technology.
- The process of ERP implementation is actually referred to as life cycle. Selection of an ERP package needs a thorough analysis of the various aspects.
- The varied stages of ERP execution include Pre evaluation Screening, Evaluation Package, Project Planning, GAP analysis, Reengineering, Team training, Testing and Post implementation.
- The process of implementation would be complete when there is a regular follow up and proper instruction flow thereafter and along the lifetime of ERP.
- The best practice in ERP then can be defined as the utilisation of these set-ups to the maximum possible to produce the desired performance in terms of customer focus, zero waste of all the resources, and value creation.
- All the workflows in ERP are so thoughtfully maintained that it ensures that the user automatically follows the best practice.
- ERP is still evolving—adapting to developments in technology and the demands of the market.

11.5 Keywords

Best Practice: The best practice in ERP can be defined as the utilisation of these set-ups to the maximum possible to produce the desired performance in terms of customer focus, zero waste of all the resources, and value creation.

ERP Implementation: ERP implementation can be defined as the installation of a software package that integrates all data and processes of an organisation into a unified system.

ERP: Enterprise resource planning (ERP) is business management software that allows an organisation to use a system of integrated applications to manage the business

GAP Analysis: GAP analysis is a stage in which the company identifies the gaps that needs to be traversed to make the company's practice in sync with ERP environment.

Post Implementation: Post implementation involves the entire efforts and measures taken to update and attain better benefits, after the system is implemented.

Project Planning: Project planning is a crucial stage where the implementation process is designed.

Re-engineering: The objective of reengineering is to eliminate non-value-added activities and administrative barriers.

Testing: Testing phase is performed to find the weak links, which could be rectified before implementation.

11.6 Review Questions

1. Explain the concept of ERP implementation.
2. Discuss the prior-implementation stage of ERP.
3. Describe the different stages in which the ERP system is implemented.
4. What do you mean by the best practice in ERP environment? Discuss.
5. Discuss various ERP implementation best practices that are considered when selecting and deploying a solution.

Notes

6. How Social Media revolution forced companies to integrate social media into their ERP applications and software? Explain.
7. Describe the concept of GAP analysis in ERP implementation.
8. What is the use of testing while implementing ERP? Explain.
9. If ERP is implemented successfully, the company automatically becomes world class in terms of its practices. Comment.
10. Discuss the growth of Web-enabling software in the evolution of ERP.

Answers: Self Assessment

1.	ERP implementation	2.	ERP implementation
3.	Project planning	4.	Gap Analysis
5.	Testing	6.	True
7.	False	8.	False
9.	True	10.	True
11.	False	12.	True
13.	True	14.	False
15.	False		

11.7 Further Readings

Books

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O'Leary, Daniel E. (2000). *Enterprise Resource Planning Systems: Systems, Life Cycle, Electronic Commerce, and Risk*, Cambridge University Press.

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Online links

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http://community.dynamics.com/product/nav/navnontechnical/b/erpsoftwareblog/archive/2012/06/04/current-erp-trends-what-you-need-to-know-about-the-cloud.aspx

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Unit 12: Business Intelligence

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Objectives

After studying this unit, you should be able to:

- Define the concept of business intelligence
- Explain the concept of business intelligence data warehouse
- Identify the steps included in business intelligence data warehouse
- Discuss business intelligence tools
- Describe the concept of business performance management

Introduction

Business Intelligence at first glance is a broad array of applications or technologies designed for storing, gathering, analysing and processing information. These applications also provide access to data for professionals and help them make better business decisions. It is the ability of in depth analysis and data mining of detailed business data to provide real and significant information to users. The software allows users to access and review large amounts of complex data. Yet this is only business technology on the technical side of the spectrum, in fact we also need to acknowledge the human end, meaning the human views and concepts of Business Intelligence. Business Intelligence is just as much complicated yet helpful applications as it is the interpretations of those who use those applications. This includes the ability to effectively act through the exploitation of information and human resources.

12.1 Concept of Business Intelligence

Business Intelligence (BI) is a broad category of applications and technologies for gathering, storing, analysing, and providing access to data to help enterprise users make better business

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decisions. BI applications include the activities of decision support systems, query and reporting, Online Analytical Processing (OLAP), statistical analysis, forecasting and data mining.

Business intelligence applications can be:

- Mission-critical and integral to an enterprise's operations or occasional to meet a special requirement
- Enterprise-wide or local to one division, department, or project
- Centrally initiated or driven by user demand

Business intelligence environment one also needs to effectively analyse and intuitively present the right information, which enables them to take the right action, or make the right decisions. Business Intelligence puts emphasis on the human element and the need for not just any information, but the information that will benefit professionals and meet their quality requirements.

12.1.1 Need of Business Intelligence

In today's struggling economy with competition controlling and shrinking the landscape, it is important to make sound business decisions based on complete data. With the proper Business Intelligent implementation, businesses can make decisions and feel comfortable that they are provided with the proper tools and data needed to believe in their decisions.

Did u know? Without the correct Business Intelligence solution even well planned and executed data warehouse architectures can fail.

Business Intelligence is a decisions support system and database that can provide professionals with the information they need to make the most effective decisions for their organisation. It also provides data about the organisations details, such as customers, products and services. Honestly, when a one can access this information rapidly and easily in order to take appropriate action or make the right decision business success is realised.

12.1.2 Who uses Business Intelligence?

Business Intelligence is used to track a wide scope of unruly data. This data can be demographic trends, product line profitability, fine tuning of pricing options, identifying of top customers, and tracking product trends. That said we can come to the conclusion that most organisations could benefit from business intelligence software. These organisations can include restaurant chains, retail, or even professional sports teams.

Unfortunately business intelligence software and applications are not easily affordable, therefore they are most commonly used in large corporations, rather then small business. Yet there are new companies on the rise that are providing Business Intelligence applications to mid-sized organisations for a some what affordable fee.

Notes There are so many benefits to having one of these systems that the price is worth it if the organisation can fit the expense into their outgoing funds. Business Intelligence tools can provide significant value when considering the benefit they will have to an organisation.

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Caselet

Business Intelligence Tech Meet to Discuss Emerging Trends

Marlabs, a Bangalore-based provider of IT services, is sponsoring a 'Business Intelligence Technology' conference at the Thiruvananthapuram Technopark.

The event will focus on emerging trends in Business Intelligence (BI) Technology, a Marlabs spokesman said.

It will feature eminent speakers from leading information technology companies including Marlabs, Infosys, UST Global, NeST and Kreara.

The conference will discuss latest developments in emerging BI areas such as predictive analytics, Big Data, mobile BI, social BI and advanced visualisations. It will also highlight the growing job opportunities for newly graduated software professionals in the Tier II and Tier III cities.

Mr Anil Raghavan, chief delivery officer, Marlabs, said that "BI is one of the fastest growing areas in the IT industry today. Tier II and Tier III cities offer a large talent pool to keep pace with the growing demand for BI solutions".

Source: http://www.thehindubusinessline.com/industry-and-economy/info-tech/business-intelligence-tech-meet-to-discuss-emerging-trends/article3657955.ece

Self Assessment

Fill in the blanks:

1. ..... is a broad category of applications and technologies for gathering, storing, analysing, and providing access to data to help enterprise users make better business decisions.
2. Business Intelligence is a ..... and database that can provide professionals with the information they need to make the most effective decisions for their organisation.

12.2 Data Warehouse

A business intelligence data warehouse is an enterprise-wide store of cleansed, reconciled data extracted from a wide variety of operational systems and optimised for reporting, analysis, and monitoring.

Organisations collect and store increasing amounts of information about every aspect of their business. However, just having a data warehouse does not provide organisations with any clear business benefits. To realise any type of benefits, IT organisations need systems that allow employees to make strategic and tactical decisions based on the information stored in these data warehouses.

BI relies on Data Warehousing (a data repository designed to support an organisation's decision making), making cost-effective storing and managing of warehouse data critical to any BIDW solution. Without an effective data warehouse, organisations cannot extract the data required for information analysis in time to facilitate expedient decision-making. The ability to obtain information in real-time has become increasingly critical in recent years because decision-

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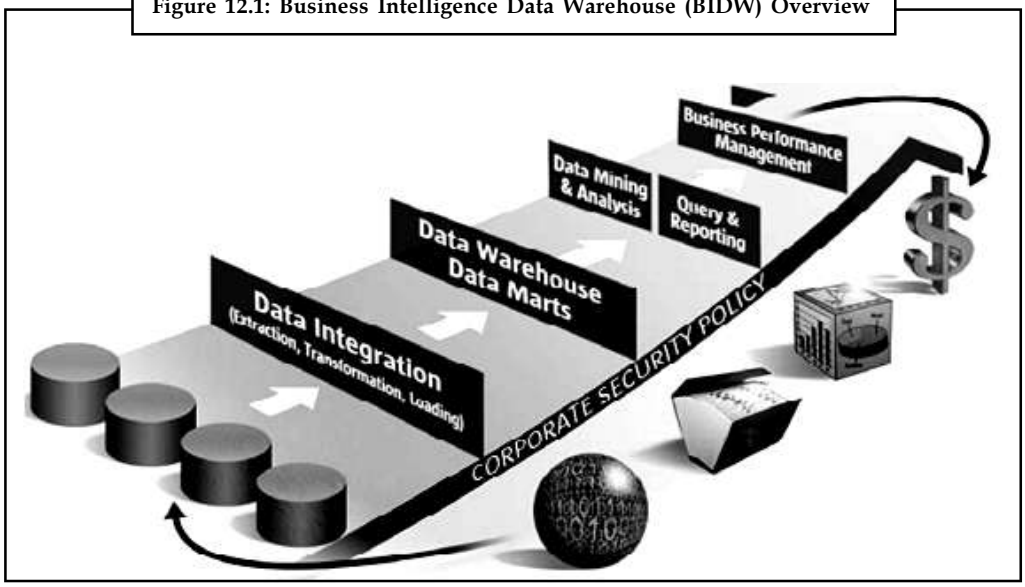
making cycle times have been drastically reduced. Competitive pressures require businesses to make intelligent decisions based on their incoming business data—and do it quickly. Simply put, the ability to turn raw data into useful information in a timely manner can add hundreds of thousands—up to millions—of dollars to an organisation's bottom line.

12.2.1 Business Intelligence Data Warehouse (BIDW) Overview

Business Intelligence Data Warehouse:

- Analyse internal business activities to improve processes, increase efficiency, and reduce costs
- Track external market trends to understand customer behaviour, improve relationships, identi

Figure 12.1: Business Intelligence Data Warehouse (BIDW) Overview



Source: http://www.inst-informatica.pt/servicos/informacao-e-documentacao/biblioteca-digital/areas-aplicacionais/business-intelligence-data-warehousing/business-intelligence-and-data-warehousing-bidw

Figure 12.1 illustrates the major components of a BI system and the process of generating business results from raw data (the operational data that is used to run the business). A brief overview of the general functions involved in the process follows.

The BIDW process can be broken down into the following steps:

- ***Raw data is stored:*** Raw data is typically stored, retrieved, and updated by an organisation's On-line Transaction Processing (OLTP) system. Additional data that feeds into the data warehouse may include external and legacy data that is useful to analyse the business.
- ***Information is cleansed and optimised:*** The information is then cleansed and optimised for decision support applications s. It is usually "read only" (meaning no updates allowed) and stored on separate systems to lessen the impact on the operational systems.

Example: Cleansed information: all duplicate items are removed. Decision support applications: structured for queries and analysis vs. structured for transactions.

- ***Data mining, query and analytical tools generate intelligence:*** Various data mining, query and analytical tools generate the intelligence that enables companies to spot trends, enhance business relationships, and create new opportunities.

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- ***Organisations use intelligence to make strategic business decisions:*** With this intelligence, organisations can make effective decisions, and create strategies and programs for competitive advantage.
- ***The system is regulated by an overall corporate security policy:*** Information in a data warehouse is typically confidential and critical to a company's business operations. Consequently, access to all functions and contents of a data warehouse environment must be secure from both external as well as internal threats and should be regulated by an overall, corporate security policy.
- ***Business performance management applications track results :*** A well-run BIDW operation also includes Business Performance Management (BPM) applications, which help track the results of the decisions made and the performance of the programs created.

12.2.2 Business Intelligence Data Warehouse (BIDW) Trends

The world is changing and the need for accurate and timely business intelligence is ever more pressing.

Key trends that are making BIDW solutions mission critical include:

- Rapid increase in "information democracy" — that is, business is putting BI tools and data in the hands of large numbers and types of users, not just an elite few. More people are getting more information in more detail on more devices.
- Businesses are required to make more decisions, more frequently and more accurately in shorter time periods. The amount of time between when a decision is made and when feedback is received (requiring a new decision) is becoming shorter and shorter. The ability to make intelligent business decisions quickly is imperative to remain competitive.
- Data is being customised on a mass scale. Personalised information such as portals, digital domains, recommendations, and news feeds are commonplace – all of these require that data warehouses be flexible enough to provide different views to different people.
- New legislation and compliance regulations have made BIDW mission critical. Regulatory requirements (such as Sarbanes-Oxley, HIPAA, Gramm-Leach-Bliley, etc., and non-U.S. equivalents) put greater demands on determining and maintaining business intelligence and have made access to and analysis of information critical.

Caution Data must be captured, retained, and managed in a way that will satisfy courts and regulators.

- The diversity of data is enormous. Organisations must store and manage data from multiple different sources such as ERP and CRM systems, and in a variety of formats such as text, images, voice, video, unstructured data, and more.
- The increased need for better security due to wider data access availability and a larger number of users. Organisations around the world are looking for ways to reduce the risk associated with managing growing and disparate forms of data.

In addition, there are a number of industry-specific drivers (listed in figure 12.2). Taken all together, it's clear that the need for timely business intelligence has become critical in today's business world.

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Figure 12.2: Industry Needs Driving BIDW

GOVERNMENT	FINANCIAL SERVICES	RETAIL	TELCO
Service to the citizen Homeland Security E-Government Enforcement & Regulation Human capital Management Information Dissemination	Compliance Reporting Portfolio Analysis Customer Statements Customer Profitability Wire Transfer Alerts Branch Office Scorecards Customer Acquisition, Relation, Profitability	Store Operation Analysis Customer Loyalty Programs Collaborative Planning and Forecasting Loss Prevention Supply Chain Optimization	Fraud Analysis Chum Analysis Improving Response Times Traffic Analysis Product Affinity/ Bundling

Source: http://www.inst-informatica.pt/servicos/informacao-e-documentacao/biblioteca-digital/areas-aplicacionais/business-intelligence-data-warehousing/business-intelligence-and-data-warehousing-bidw

This Figure 12.2 highlights some of the major reasons customers are implementing BIDW systems in four major vertical industries—Government, Financial Services, Retail, and Telecommunications.

Self Assessment

Fill in the blanks:

3. A business intelligence ..... is an enterprise-wide store of cleansed, reconciled data extracted from a wide variety of operational systems and optimised for reporting, analysis, and monitoring.
4. Raw data is typically stored, retrieved, and updated by an organisation's ..... system.
5. ..... in a data warehouse is typically confidential and critical to a company's business operations.

12.3 Business Intelligence Tools

Business Intelligence (BI) tools are add-on software applications that a company uses to consolidate and make sense of the mountains of data it develops, such that managers can act intelligently upon that data.

Businesses often have a tremendous amount of data to sort through and Business Intelligence Tools are the software used to view data that is typically complex. The tools allow multiple ways of looking at the data. The concept for Business Intelligence Tools emerged from the business intelligence environment where businesses had a need to gather data. Consistently monitoring the operations and financial aspects of a business helps determine its current health and where it should be in the future.

Business intelligence tools are a type of software that is designed to retrieve, analyse and report data. This broad definition includes everything from spreadsheets, visual analytics, and querying software to data mining, warehousing, and decision engineering.

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There are a range of business intelligence tools available in the commercial software market, and selecting the correct solution requires a good understanding of reporting requirements and long-term business needs.

Tools fall into three categories: query tools, multidimensional analysis tools and data mining tools.

- ***Query Tools:*** A query tool is software setup for users to ask questions about the data. The user can search for patterns or details. There are many query tools on the market and, according to 1keydata, the first decision is buying a fully functional product or building one.

Example: Query tools include: Microsoft Dynamics AX-Enterprise Resource Planning Solution, OmniVision-Reporting & Analysis for Managing Distributed Systems, XRL and Hyperion System 9-Business Performance Management Architecture.

There are many other query tools on the market. Deciding what works best for a business can be complex, since the tool may be operating-system specific, it may be tested to work with certain databases or it might be opensource (transparent data accessible to multiple parties) for users on a network. Other considerations are the time involved in implementation, the cost and user ability.

- ***Data Mining Tools:*** A data mining tool is software that is automated to search data, seeking out ways that the data correlates to other data. It is basically seeking patterns. Selecting a data mining tool can be complex. Even experts in the field state that they are not familiar with all of the tools and complete capabilities. Elder Research compared numerous tools including: Clementine, Darwin, DataCruncher, Enterprise Miner, Gainsmarts, Intelligent Miner, MineSet, Model 1, Model Quest, PRW, Cart, Neuroshell, Olpars, Scenario, See 5, S-Plus and WizWhy.

  Product comparisons included functionality like what algorithms are used, usability, data input and output capabilities and modelling automation.

  Data mining tools are usually only by very specialised users, and in an organisation, even large ones, there are usually only a handful of users using data mining tools.

Did u know? Data mining tools are used for finding correlation among different factors.

- ***Multidimensional Analysis Tools:*** A multidimensional analysis tool, also called Online Analytical Processing (OLAP), is software that allows the user to view the same data from different aspects. The most popular OLAP tools are created by companies such as Business Objects, Hyperio, Cognos, MicroStrategy, Pentaho, Microsoft Analysis Services and Palo OLAP Server.

  Multidimensional analysis tools have many of the same considerations as query tools and data mining tools in cost, usability and functionality. There is also a key consideration for security, since OLAP tools often have many users within a business looking at data. Security protocols are often necessary as part of the software.

The most common tools used for business intelligence are as follows. They are listed in the following order: Increasing cost, increasing functionality, increasing business intelligence complexity, and decreasing number of total users.

- ***Excel:*** Take a guess what's the most common business intelligence tool? You might be surprised to find out that it's Microsoft Excel. There are several reasons for this:

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- It's relatively cheap.
- It's commonly used. You can easily send an Excel sheet to another person without worrying whether the recipient knows how to read the numbers.
- It has most of the functionalities users need to display data.

In fact, it is still so popular that all third-party reporting/OLAP tools have an "export to Excel" functionality. Even for home-built solutions, the ability to export numbers to Excel usually needs to be built.

Excel is best used for business operations reporting and goals tracking.

- ***Reporting tool:*** Business intelligence involves using computer systems to analyse company data, including financial data, budgeting and costs. Reporting tool is used to arrange information into a readable format and distribute it to the people who need it. Business Intelligence Reporting Tools (BIRT) are the software systems responsible for doing this work; these systems analyse the data and output reports based on their findings. Standard BIRT tools involve data mining, reporting, spreadsheets and Online Analytical Processing (OLAP). While some of these tools are free, you must pay for most of them.

  Business operations reporting and dashboard are the most common applications for a reporting tool.

  - *Business Performance:* This type of business intelligence tool has really started to catch on and has been a terrific way to organise, automate and analyse key business methods and processes that greatly impact business performance.

Example: Applying business performance management allows corporations to optimise the use of financial, materials and human resource capital.

  - *Digital Dashboards:* Digital dashboards are popular business intelligence tools, especially among top management because they are visual and easy to read. In one quick summary, key decision makers can instantly get a visual display of performance measures, identify key trends, generate detailed reports and gain insight into all of the company's systems from their desktops.

- ***OLAP (Online Analytical Processing) tool:*** OLAP tools are usually used by advanced users. They make it easy for users to look at the data from multiple dimensions. OLAP tools are used for multidimensional analysis. These are multi-dimensional analytical tools, typically used in data mining that gather and process vast amounts of information into useful packets.
- ***ETL (Extract, Transform, Load) Tool:*** ETL tools bring in data from outside sources, transform it to meet your specified operational needs, and then load the results into your company database.
- ***Metadata Tools:*** As the name suggests, these tools gather and analyse metadata, helping to increase data quality.

Task Make distinction between OLAP tool and ETL tool.

Self Assessment

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Fill in the blanks:

6. Business intelligence tools are a type of ..... that is designed to retrieve, analyse and report data.
7. A ..... tool is software setup for users to ask questions about the data. The user can search for patterns or details.
8. A ..... tool is software that is automated to search data, seeking out ways that the data correlates to other data.
9. A ..... tool, also called Online Analytical Processing (OLAP), is software that allows the user to view the same data from different aspects.
10. ..... are popular business intelligence tools, especially among top management because they are visual and easy to read.
11. ..... tools bring in data from outside sources, transform it to meet your specified operational needs, and then load the results into your company database.
12. ..... tools gather and analyse metadata, helping to increase data quality.

12.4 Business Process Management

Business Performance Management (BPM) can be considered as being the final component of business intelligence. Business performance management allows companies to more efficiently collect data from their various sources, analyse it and take appropriate action. Through continuous and real-time reviews, BPM provides the data to help companies monitor efficiency of projects and employees against operational targets. Problems can be identified before they grow and forecasting can become more reliable and predictable. BPM also can be used to analyse risk and predict outcomes of various scenarios, including mergers and acquisitions.

Business Performance Management produces actionable results through business intelligence. Business intelligence is the key to enterprise performance success. Business performance management software can help you harness business intelligence, and use it to your advantage.

Now more than ever, businesses need timely and accurate information to improve performance, increase revenue, reduce costs and optimise resources. Business intelligence (BI) provides the purposeful information necessary to help you improve your decision-making and business processes.

Typical reasons organisations struggle with business performance management and BI projects include:

- ***Lack of planning***—Failing to set reasonable goals and objectives up front or not establishing proper controls to signal the business has strayed off course
- ***Limited access to data***—Business users find it difficult and overly complex to properly assess information from disparate data sources across the organisation
- ***Lack of adoption***—The sooner a business intelligence solution delivers value, the faster it will be adopted throughout the organisation

Business Performance Management is the next phase in the evolution of decision support systems, enterprise information systems and business intelligence. If BPM is an outgrowth of BI and incorporates many of its technologies, applications and techniques, than why BI itself can't

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deliver the insight needed to improve overall business performance? From a theoretical viewpoint, it can. From a practical standpoint, it hasn't (Table 12.1).

Like decision support, BPM is more than a technology. It involves the processes, methodologies, metrics and technology used to monitor, measure sand manage a business. Once selected the business process that has to be improved, and the business methodology to be implemented, there are the metrics (to monitor, measure and change) to be established. These metrics (key performance indicators) are defined and selected by the business and not by the IT. The final step is to choose the business performance measurement technology. We can say that business intelligence it is just business measurement and not business performance management.

BPM is not a single technology, but rather a combination of elements – BI, scorecarding, profiling. BI looks at and analyses the past and what has happened up until today – this is useful, as planning requires knowledge and you can set planning goals based on the past. Scorecarding enables you measure how you are performing against those planned goals. Every organisation has processes in place that feed back to the overall plan. What's new with BPM is the integration of these processes, methodologies, metrics and systems – an enterprise wide strategy that seeks to prevent organisations from optimising local business at the expense of overall corporate performance.

Table 12.1: Differences between Traditional BI and BI for BPM

Factor	Traditional BI	BI for BPM
Scale	Departmental	Enterprise-wide
Focus	Historical	Timely
Decisions	Strategic and tactical	Strategic, tactical and operational
Users	Analysts	Everyone
Orientation	Reactive	Proactive
Process	Open-ended	Closed-up
Measures	Metrics	Key performance indicators
Views	Generic	Personalized
Visuals	Tables/charts	Dashboards/scorecards
Collaboration	Informal	Built-in
Interaction	Pull (ad hoc queries)	Push (alerts)
Analysis	Trends	Exceptions
Data Numeric only	Numeric, text, etc.	

Source: http://steconomice.uoradea.ro/anale/volume/2009/v4-management-and-marketing/210.pdf

Any BI implementation is aimed at turning available data into information and delivering it to the decision makers. BPM is focused on a subset of the information delivered by a BI system – the information that shows business performance and indicates business success or failure and enables organisations to focus on optimising business performance. BPM involves a closed-loop set of processes that link strategy to execution in order to respond to that task. Optimum performance is achieved by:

- Setting goals and objectives – strategise
- Establishing initiatives and plans to achieve these goals – plan
- Monitoring actual performance against the goals and objectives – monitor
- Taking corrective action – act and adjust

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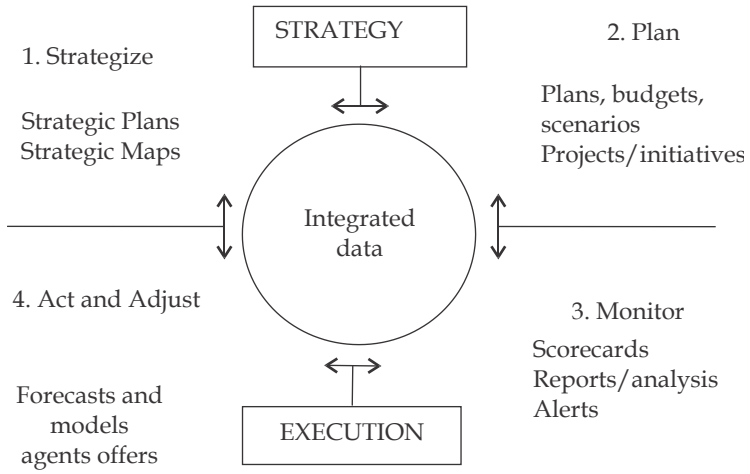
Figure 12.3: BPM Processes



Source: http://steconomice.uoradea.ro/anale/volume/2009/v4-management-and-marketing/210.pdf

Notes The key to effective BPM is tying performance metrics to business strategy, and that means a melding of two areas of technological functionality: strategic management systems and performance metrics. The first are systems that manage the key business processes that affect strategy execution, including objective management, initiative management, resource management, risk management and incentive management. The second is essentially a business intelligence platform for automated data exchange, reporting and analysis.

BPM should produce three core deliverables:

- Information delivery to enable managers to understand the business.
- Performance oversight to enable them to manage the business.
- Performance effectiveness to enable them to improve the business.

Caution Business performance management must be an enterprise-wide strategy that seeks to prevent organisations from optimising local business at the expense of overall corporate performance.

Task What are the steps included in business process optimum performance?

Self Assessment

Fill in the blanks:

13. ..... can be considered as being the final component of business intelligence. Business performance management allows companies to more efficiently collect data from their various sources, analyse it and take appropriate action.

Notes

14. Any BI ..... is aimed at turning available data into information and delivering it to the decision makers.

15. Business performance management must be an ..... strategy that seeks to prevent organisations from optimising local business at the expense of overall corporate performance.

Case Study

V-Guard Generates Greater Efficiency with IBM & SAP

Founded in 1977 as a small manufacturing unit, V-Guard Industries Ltd. (V-Guard) has grown to become one of the largest electrical appliance manufacturers in India. The company reported revenues of more than $126 million for the 2010 to 2011 financial year, and a 43 percent increase in net sales during the same period.

V-Guard manufactures electrical products, including voltage stabilizers, wiring cables, pumps, motors, solar water heaters and electric fans. The company employs more than 1,700 people, operates some 200 distribution and service centers, and partners with around 9,500 retailers to deliver its products to a client base of approximately 50 million people.

Major Business Transformation

V-Guard is growing organically and by acquisition within India, and is looking to expand internationally. As business booms, the sheer volume of information generated by its operations on materials, production, sales and finance threaten to overwhelm the company.

Robin Joy, CIO and General Manager of V-Guard Industries Ltd, explains, "Our existing IT systems had been developed in-house and had supported us well in the past, but gaps began to emerge as the business expanded. We relied on a number of different applications for inventory management, production, product costing and financial accounting, and the lack of integration between these systems was really starting to impact operational visibility and efficiency as we continued to grow."

Recognizing that its existing information management systems were not sophisticated enough to cope with the changing needs of the business, V-Guard sought a robust solution that would promote enhanced information and process control, and provide a stable foundation for continued enterprise growth.

Selecting IBM Global Business Services

After considering a number of options, the company selected integrated SAP® ERP software as its strategic business management solution and then looked for a partner to manage the implementation.

"We evaluated a number of companies as potential partners and ultimately chose to work with IBM® Global Business Services®," remarks Robin Joy. "As a SAP implementer, IBM's credentials are well known and established by the countless number of SAP implementations that they have successfully completed."

Along with providing SAP implementation management, IBM Global Business Services also offered SAP software license reselling services. V-Guard was able to negotiate a competitive price for the combination of SAP software licenses, implementation and infrastructure components as a single, known project cost.

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Meeting Strict Deadlines

V-Guard established a tight six-month timeframe for the first stage of its SAP implementation. In response, IBM Global Business Services prepared a plan for a fast-track deployment based on the Ascendant SAP method.

Subsequently, V-Guard worked with IBM to design and configure a comprehensive SAP solution that met the company's requirements. The architecture is designed to enable V-Guard to expand the solution by adding new SAP application components as the need arises, based on a standardized, virtualized IT infrastructure.

To meet the challenge of tight project deadlines, and to reduce the overall risk exposure during V-Guard's sales season, IBM Global Business Services split the implementation project into two phases. During the first phase, V-Guard worked with IBM to deploy SAP ERP 6.0 and modules for Sales and Distribution, Materials Management, Production Planning, Quality Management, and Finance and Controlling. Additional SAP ERP modules, including Plant Maintenance and Human Capital Management, as well as SAP BusinessObjects™ Business Intelligence and SAP NetWeaver® Business Warehouse, were implemented over the course of two months during the second project phase.

The IBM Global Business Services team was confronted with a number of obstacles in bringing the business on board with the transformation effort. V-Guard's legacy systems were strongly entrenched in the company's operational culture, and moving from these systems and aligning the business to standardized SAP processes without buy-in from most users required a significant change management effort. It was also vital that the project conformed to complex statutory and legal requirements.

IBM Global Business Services rose to these challenges, providing dedicated project management and working closely with V-Guard to deliver the project a month ahead of schedule.

"The entire implementation was brilliantly planned and executed: we kicked off in September 2011 and the first project track went live in February 2012, beating our deadline by almost a month," says Robin Joy. "There were no delays, and timelines were rigorously followed."

Based on the excellent outcomes achieved with the SAP solution implementation, V-Guard has awarded IBM with a three year Application Maintenance Services contract. IBM Application Management Services will work closely with V-Guard to provide functional and technical expertise, and enable system and process improvements, helping the company to take its business to the next level.

Harmonizing Business Processes

V-Guard has successfully completed a major business transformation program, consolidating a disjointed system landscape on to a single, centralized SAP ERP platform.

Important business processes have been integrated, creating a streamlined supply chain, stretching from procurement and inventory management to sales and distribution, product costing and financials. The company has cut complexity and introduced a high degree of business process automation. It is possible for V-Guard to track products at every stage from materials to final delivery, ensuring that when customers demand specific information, V-Guard can meet the need rapidly and easily.

Improved Visibility at Every Level

The new solution provides V-Guard with much enhanced visibility into operations, offering a real-time view of all its manufacturing locations and distribution centers.

Contd....

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Integration of manufacturing and logistics with financials and costing also enables the company to quickly and accurately identify and assess true product costs. Where necessary, V-Guard can adjust pricing to ensure that margin is maintained, helping to drive total profitability by product, business unit and enterprise.

On the sales front, SAP applications provide an availability check, which considers the stock-in-transit and stock-in-purchasing along with the stock-on-hand when predicting availability. Robin Joy explains: "This feature indirectly helps us to identify our constraints in supply chain and efficiencies. By proper monitoring it should be possible to improve our inventory cycle time and enable better servicing of orders."

Enhanced Analysis and Reporting

IBM Global Business Services also built an analytics dashboard using the SAP BusinessObjects Business Intelligence (BI) platform, which presents previously unavailable business data to senior managers. For example, executives are able to see current sales and purchase orders, track the number, value and progress of contracts, and use the information to obtain better prices, terms or delivery schedules from suppliers. Similarly, the dashboard shows immediate profitability analysis by product, which enables executives to identify and correct business challenges early and improve company performance.

V-Guard is using SAP NetWeaver Portal to provide a single point of access to reports and dashboards created using SAP BusinessObjects BI, as well as to employee self-service applications.

IBM is also working on newer initiatives to develop a new set of Key Performance Indicators (KPIs) and develop extensive SAP Business Objects BI reports. The SAP solution will allow users to generate more accurate reports that support better performance analysis and management, helping to drive smarter decision-making.

Better Business Control

V-Guard can manage its business in ways that were simply not possible before, and grow within India and internationally without a corresponding rise in administration costs.

For example, more than 20 people were previously involved in generating month-end closing figures that took more than ten days to deliver. Now just three people can produce the figures in less than three days, a 70 percent improvement and a productivity gain of 85 percent.

Moreover, V-Guard is listed on the Indian Stock Exchange, which requires quarterly reports. Previously these reports took up to 12 days to create, whereas the new solution generates them in five days, a 58 percent improvement

Robin Joy concludes: "The IBM and SAP solution makes validated, accurate information available more rapidly than ever before. Even as our company grows at a breakneck rate of 40 percent annually, the solution is designed to keep pace, helping V-Guard to reach its ambitious expansion targets."

Question

According to you, what challenges IBM faced in implementing Business Intelligence (BI) platform?

Source: http://www-01.ibm.com/software/success/cssdb.nsf/CS/STRD-93SL92?OpenDocument&Site=default&cty=en_us

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12.5 Summary

- Business Intelligence (BI) is a broad category of applications and technologies for gathering, storing, analysing, and providing access to data to help enterprise users make better business decisions.
- Business Intelligence is a decisions support system and database that can provide professionals with the information they need to make the most effective decisions for their organisation.
- A business intelligence data warehouse is an enterprise-wide store of cleansed, reconciled data extracted from a wide variety of operational systems and optimised for reporting, analysis, and monitoring.
- Without an effective data warehouse, organisations cannot extract the data required for information analysis in time to facilitate expedient decision-making.
- Business intelligence (BI) tools are add-on software applications that a company uses to consolidate and make sense of the mountains of data it develops, such that managers can act intelligently upon that data.
- There are a range of business intelligence tools available in the commercial software market, and selecting the correct solution requires a good understanding of reporting requirements and long-term business needs.
- Business performance management allows companies to more efficiently collect data from their various sources, analyse it and take appropriate action.
- Business Performance Management is the next phase in the evolution of decision support systems, enterprise information systems and business intelligence.

12.6 Keywords

Business Intelligence Data Warehouse: A business intelligence data warehouse is an enterprise-wide store of cleansed, reconciled data extracted from a wide variety of operational systems and optimised for reporting, analysis, and monitoring.

Business Intelligence: Business Intelligence (BI) is a broad category of applications and technologies for gathering, storing, analysing, and providing access to data to help enterprise users make better business decisions.

Business Performance Management: Business performance management allows companies to more efficiently collect data from their various sources, analyse it and take appropriate action.

Data Mining Tool: A data mining tool is software that is automated to search data, seeking out ways that the data correlates to other data.

Data Warehousing: Data warehousing is a data repository designed to support an organisation's decision making.

ETL Tool: ETL tools bring in data from outside sources, transform it to meet your specified operational needs, and then load the results into your company database.

Multidimensional Analysis Tool: A multidimensional analysis tool, also called Online Analytical Processing (OLAP), is software that allows the user to view the same data from different aspects.

Query Tool: A query tool is software setup for users to ask questions about the data.

Notes

12.7 Review Questions

1. What is business intelligence? Discuss the need of business intelligence.
2. Explain the concept of business intelligence data warehouse.
3. What are the steps included in business intelligence data warehouse process? Discuss.
4. Discuss the key trends included in business intelligence data warehouse.
5. What are business intelligence tools? Classify business intelligence tools into different categories.
6. What is a business intelligence reporting tool? Describe the most common applications used for a reporting tool.
7. Explain the concept of Business Performance Management.
8. Business Performance Management produces actionable results through business intelligence. Comment.
9. Make distinction between query tool and data mining tool.
10. Describe the concept of multidimensional analysis tools. Also give examples.

Answers: Self Assessment

1. Business Intelligence (BI)
2. decisions support system
3. data warehouse
4. On-line Transaction Processing (OLTP)
5. Information
6. software
7. query
8. data mining
9. multidimensional analysis
10. Digital dashboards
11. ETL
12. Metadata
13. Business Performance Management (BPM)
14. Implementation
15. enterprise-wide

12.8 Further Readings

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Unit 13: Knowledge Management

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13.7 Review Questions
13.8 Furthur Readings

Objectives

After studying this unit, you should be able to:

- Define the concept of knowledge management
- Discuss the applications of knowledge management
- List the benefits of knowledge management
- Discuss best practices for a KM project
- Describe supporting technologies of knowledge management

Introduction

Knowledge is the ability to make effective decisions, and take effective action. Knowledge Management (KM) is a concept and a term that arose approximately two decades ago, roughly in 1990. Quite simply one might say that it means organising an organisation's information and knowledge holistically, but that sounds a bit woolly, and surprisingly enough, even though it sounds overbroad, it is not the whole picture. Knowledge management is the name of a concept in which an enterprise consciously and comprehensively gathers, organises, shares, and analyses its knowledge in terms of resources, documents, and people skills. Knowledge Management (KM) refers to a multi-disciplined approach to achieving organisational objectives by making the best use of knowledge. KM focuses on processes such as acquiring, creating and sharing knowledge and the cultural and technical foundations that support them. In early 1998, it was believed that few enterprises actually had a comprehensive knowledge management practice (by any name) in operation. Advances in technology and the way we access and share information has changed that; many enterprises now have some kind of knowledge management framework in place.

Notes

13.1 Concept of Knowledge Management

Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously uncaptured expertise and experience in individual workers

We define knowledge management as a business activity with two primary aspects: Treating the knowledge component of business activities as an explicit concern of business reflected in strategy, policy, and practice at all levels of the organisation.

- Making a direct connection between an organisation's intellectual assets — both explicit [recorded] and tacit [personal knowhow] — and positive business results.
- In practice, knowledge management often encompasses identifying and mapping intellectual assets within the organisation, generating new knowledge for competitive advantage within the organisation, making vast amounts of corporate information accessible, sharing of best practices, and technology that enables all of the above — including groupware and intranets.

That covers a lot of ground. And it should, because applying knowledge to work is integral to most business activities.

13.1.1 Importance of Knowledge Management

Most companies are focused on producing a product or service for customers. However, one of the most significant keys to value-creation comes from placing emphasis on producing knowledge. The production of knowledge needs to be a major part of the overall production strategy.

One of the biggest challenges behind knowledge management is the dissemination of knowledge. People with the highest knowledge have the potential for high levels of value creation. But this knowledge can only create value if it's placed in the hands of those who must execute on it. Knowledge is usually difficult to access – it leaves when the knowledge professional resigns.

"The only irreplaceable capital an organisation possesses is the knowledge and ability of its people. The productivity of that capital depends on how effectively people share their competence with those who can use it." – Andrew Carnegie

Therefore, knowledge management is often about managing relationships within the organisation. Collaborative tools (intranets, balanced scorecards, data warehouses, customer relations management, expert systems, etc.) are often used to establish these relationships. Some companies have developed knowledge maps, identifying what must be shared, where can we find it, what information is needed to support an activity, etc. Knowledge maps codify information so that it becomes real knowledge; i.e. from data to intelligence.

Example: AT&T's knowledge management system provides instant access for customer service representatives, allowing them to solve a customer's problem in a matter of minutes. Monsanto uses a network of experts to spread the knowledge around. Employees can lookup a knowledge expert from the Yellow Page Directory of knowledge experts.

Notes

Caselet

Knowledge Management Market to Increase Five-fold

The Indian market for knowledge management (KM) is expected to increase five-fold to ₹ 152.7 crore by 2004-05, from ₹ 27.7 crore in 2001-02 — a CAGR of 75.6 per cent, says an IDC India report.

The composition of two major components – products (packaged KM applications) and services (consulting, implementation, operation, support and training devices around KM adoption) – is also expected to undergo a reversal during the forecast period. Currently, the products account of 35 per cent, which is expected to increase to 50 per cent in 2004-05, the report says.

The Indian market is expected to grow more in financial services, manufacturing, telecom and professional services, Mr Kapil Dev Singh, Head, Software and Services, IDC India Ltd, said in a release.

The KM market in India is in the nascent stage and is limited to only select verticals such as banking, finance, consumer goods, dotcoms and IT service companies.

From the supplier side, the KM market is characterised by a number of specific offerings from various types of local and global products and services companies. Currently, most of the companies are offering solutions around a particular business problem in various types of enterprises, says the release.

Source: http://www.thehindubusinessline.in/2002/06/28/stories/2002062800960700.htm

Self Assessment

Fill in the blanks:

1. ..... is the ability to make effective decisions, and take effective action.
2. ..... is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets.
3. Knowledge Management (KM) refers to a ..... approach to achieving organisational objectives by making the best use of knowledge.
4. ..... are often used to establish the relationships between organisations.

13.2 Applications and Benefits of Knowledge Management

Some applications have been implemented using a KM framework such as: knowledge creation, knowledge assets, knowledge inertia, methods and techniques, KM development and history, organisational learning, organisational innovation, organisational impact, intellectual capital, strategy management, systems thinking, and artificial intelligence/expert systems.

The applications of knowledge management are:

- Knowledge creation
- Knowledge assets
- Methods and techniques
- KM development

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- Organisational learning
- Organisational innovation
- Intellectual capital
- Strategy management
- Organisational impact
- Systems thinking Artificial intelligence/Expert systems
- Knowledge inertia

Knowledge based systems includes all those organisational information technology applications that may prove helpful for managing the knowledge assets of an organisation, such as Expert systems, rule-based systems, groupware, and database management systems.

Now let us discuss some benefits of Knowledge Management.

In today's business world, knowledge is the single most important competitive advantage. Especially for the service and support organisation, the benefits of knowledge management systems for organisations are clear: more satisfied and loyal customers, higher efficiency, and better insights for improving products and services. Knowledge management is the new imperative for the service and support organisation. Benefits of Knowledge Management are discussed below.

- ***Identifying the Benefits of Knowledge For Service And Support Organisations:*** Service and support organisations are under unprecedented pressure. Products and services become ever more complex. Customer expectations continually increase. And budgets have never been tighter.

  Yet, in the face of these challenges, inefficiencies pervade the service and support market. Knowledge is in too many places, so people just give up and don't bother to look for it. It's too hard to capture knowledge, so people hoard it instead. Knowledge that is captured is too hard to keep up-to-date. And knowledge is too hard to find.

  Effective knowledge management supported by the right technology eliminates these inefficiencies, allowing organisations to focus on delivering business value.

- ***Never Solve The Same Problem Twice:*** How often does a front-line staff resolve a problem that has already been solved by someone else? How often are questions escalated, even though the front line should have already known the answer? Industry data suggests that these situations are common and costly, which means that avoiding rework can be the single most valuable benefit delivered by knowledge management.

Notes By providing each team member with the collective experience of the organisation, organised in a knowledge management system, known issues can be handled quickly, consistently, and with confidence by the front line.

- ***Knowledge Management Benefits at Work:*** Learn how Verizon Wireless implemented the OneSource project to bring its knowledgebase to over 40,000 service reps, reducing "content chaos" to increase first contact resolution, decrease escalations, speed handle time, and handle significant growth in the customer base without a corresponding increase in staff.

- ***Help Customers Help Themselves:*** Sometimes, customers really need to contact you in person, right now. But more often, if they have a good way to answer their own questions and resolve their own issues, they'd prefer to do it themselves. Effective knowledge

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management can make self-service the channel of choice for most customers, most of the time, helping them get back to using your products and services more quickly, and allowing your staff to concentrate on the high-value issues that really need their expertise.

- ***Increase Customer Satisfaction and Loyalty:*** What do customers really want? A trouble-free product and service experience. By the time they have to contact you to get help or answer a question, their perception of the value of your offering is already diminished. That's why it's essential to handle these moments of truth flawlessly. Fortunately, knowledge management can help by making every staff member, literally, knowledgeable; by ensuring consistency in responses; by increasing first-time resolution; and, by empowering customers with the knowledge they need to resolve issues without waiting for a response from you.

Did u know? Knowledge management does not carry its name accidentally because management normally means that 'something' has to be managed.

Task How does knowledge management increase customer satisfaction and loyalty?

Self Assessment

State whether the following statements are true or false:

5. Knowledge management can make self-service the channel of choice for most customers.
6. Knowledge management can help by making every staff member knowledgeable.
7. Knowledge management does not avoid rework.

13.3 Best Practices for a KM Project

We have discussed below a series of best practices that can help you design and deploy a successful knowledge management solution. By adopting the following practices, you can deliver an outstanding customer experience and gain significant return on your knowledge management investment.

13.3.1 Best Practice 1: Clearly Define Your Initiative

Successful knowledge management projects start with a realistic scope and precisely defined goals and objectives. Although the ultimate goal of your initiative may be to deploy knowledge management for agents as well as self-service customers, it's best to avoid "big bang" implementation in favour of a phased approach. There's no right or wrong place to initiate a knowledge project, but organisations expose themselves to the least risk when the first implementation occurs in the contact centre, because you gain the opportunity to test and improve the guidance techniques and content in an internal environment—so you won't subject customers to a poorly executed self-service experience. By fine tuning knowledge management in the contact centre, you enable customers to experience a more mature solution that can lead to faster adoption, long-term usage, and increased online service satisfaction.

The cost savings achieved from a contact centre deployment—which can include higher agent productivity, shorter call times, and fewer escalations—can be used to fund subsequent rollouts.

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Table 13.1: Knowledge Management Initiative – Typical Goals and Objectives

Contract Center Goal: Reduce operational costs	**Web self-service Goal: Higher Customer Satisfaction and Web conversions**
Improve agent productivity	Increase call deflection
Increase first-call resoultions	Increase e-mail deflection
Reduce agent training time	Improve online channel adoption
Decrease tier 2 escalations	Improve online content visibility
Reduce average handle time	Increase cross-and up-sell opportunities
Improve service-to-sales conversions	

Source: http://www.oracle.com/us/products/applications/getting-knowledge-managt-right-wp-1353041.pdf

Don't Forget the Law of Unintended Consequences

As you start to look at potential knowledge management solutions, keep in mind the law of unintended consequences and the possible adverse results.

Example: If you implement a solution in the contact centre that provides broad search results with little contextual filtering, you'll likely only increase the time agents required to answer questions. As a result, Average Handle Time (AHT) will go up — and you'll have achieved the opposite of the effect you intended. However, if a major objective is to increase first-call resolution rates—even if the AHT slightly increases—giving first-line agents more research capability might be the right choice.

The Consequences of Technology

One of the most important considerations for knowledge management technology is how well it's integrated with the agent desktop. A solution that's not fully integrated will require additional navigation to get to useful answers—wasting precious seconds that can add up to substantial increases in AHT.

An integrated desktop, in contrast, can use CRM and case data to contextually drive the discovery process. Queries can be automatically linked to case fields such as case type, summary, and product. And you can create links that automatically capture the solutions that shorten call wrap-up time and create a historical record of all solutions used on the case.

A single integrated desktop can improve multiple contact centre metrics—reducing time to proficiency for new hires, decreasing AHT, minimising training impacts, and improving agent morale by making access to knowledge part of the natural flow of managing customer inquiries. Similarly, a Web self-service implementation that yields thousands of answers for site visitors to wade through may seem like a good idea—after all, you're giving customers greater access to useful information—but it can have the reverse effect, annoying customers who have to search and sift through daunting amounts of information.

Caution Here, the likely result is more e-mails and phone calls instead of the projected substantial reduction.

Notes

To recognise and respond to unexpected results, you will want to ascertain current-level metrics for key areas, establishing baselines for measuring the success of your initiative. Before beginning your implementation, make sure you have at least six months of data, and then use that as a benchmark to measure what happens in the first 30 to 60 days after implementation. This comparative data will provide early indicators for immediate corrective action. As you collect this data over multiple deployments, it can also demonstrate that adverse consequences are temporary and that expected improvements will begin to manifest themselves after the changes have taken hold in the organisation.

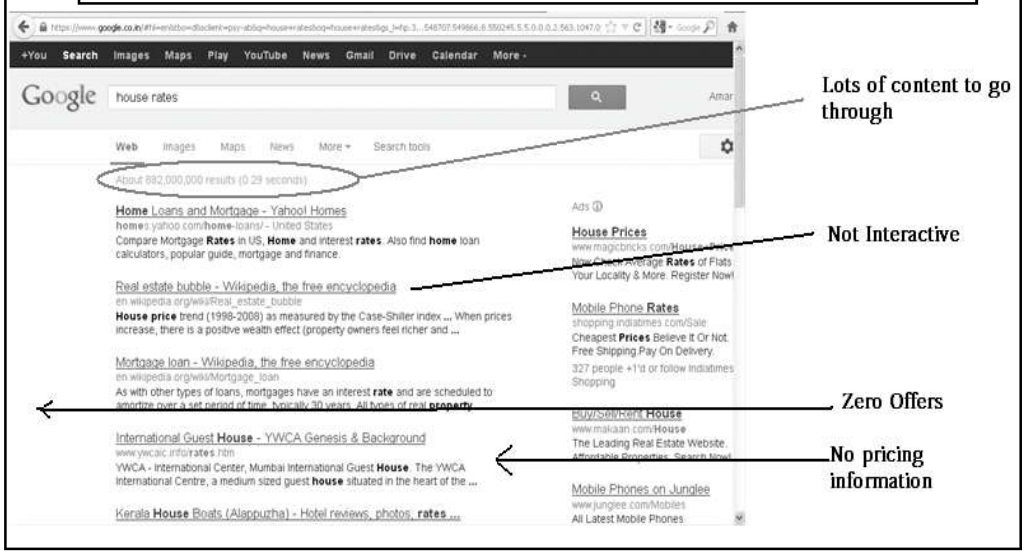
13.3.2 Best Practice 2: Remember that Less is More

The decision to expose content to customers and prospects who visit your website can lead to information overload. This stems from the well-meaning—but misguided—belief that the more content you provide, the better off the customer will be. One of the primary goals of any self-service implementation should be to provide a better overall customer experience. When it comes to finding information, customers measure the experience primarily by how quickly and effectively the site delivers relevant and useful answers. Think about a customer who initiates a search for the price of a new product on your site: is bombarding them with a Google-like results list the experience you want to deliver? With the amount of information available to users growing at an astounding rate, exposing vast quantities of information to customers (or agents) won't improve their ability to find a useful answer.

The old 80/20 rule—80 percent of inquiries can be answered by 20 percent of content—is highly relevant to a knowledge management implementation. The key to delivering a high-quality experience is to deploy a rich subset of relevant content, focus, and structure for handling the most frequent and common questions.

The best way to illustrate this "less is more" principle is to look at some existing Websites — beginning with one that follows the opposite (more is better) approach. When searching for an answer to the question "What is the price of the new BlackBerry Curve," the site in Figure 13.1 delivers the following experience.

Figure 13.1: Too Many Unfiltered Results and Zero Offers, Pricing Information, or Interactivity Detract from the Usability of This site's Search Results



Source: http://www.oracle.com/us/products/applications/getting-knowledge-managt-right-wp-1353041.pdf

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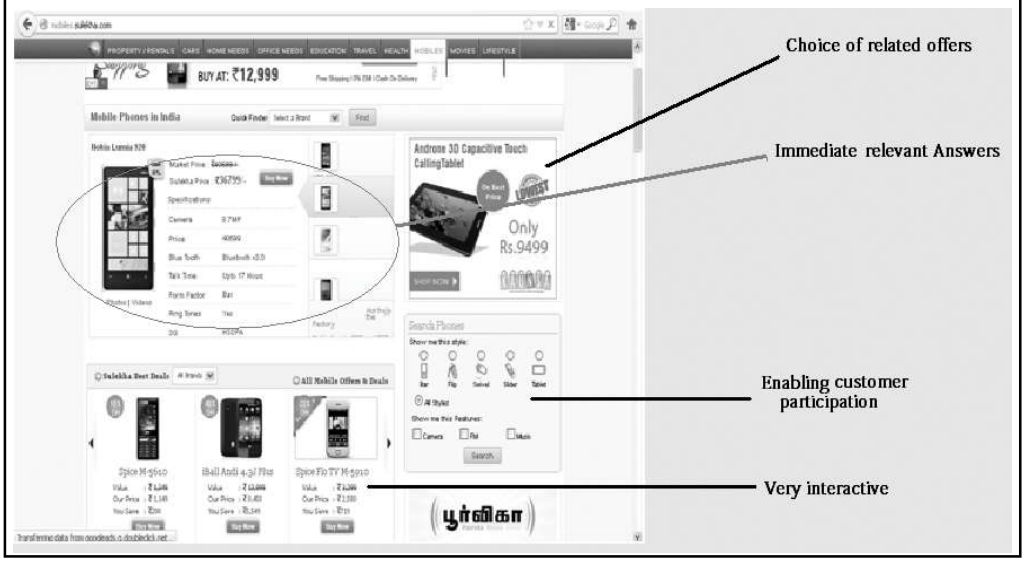
Providing hundreds of results to sift through and zero at-a-glance pricing information, this Website delivers an unsatisfying experience—making the customer expend additional time and effort (and likely do more searches) to find the desired pricing information. This kind of experience can frustrate the customer—leading to a costly phone call or, worse, abandonment of the site in favour of a competitor with a more customer-friendly approach to information delivery. Now let's look at the same inquiry and customer experience handled by the website of a large telecommunications company, which adheres to the principle of relevant content, focus and structure.

Figure 13.2: This Website Demonstrates a Better way of Providing Results for the Same Search



Source: http://www.oracle.com/us/products/applications/getting-knowledge-managt-right-wp-1353041.pdf

In this Website experience, the knowledge platform structures the results to tie them directly to the customer's intent. Prominently displayed pricing information is enriched with related content and activities that can help prod the customer to click the Add to Basket button. The integration between content and inquiry also enables the customer to provide feedback about the effectiveness of the inquiry response, which helps the company refine and improve the experience on its site. This level of intentional service can have profound effects on the overall customer experience and the efficiency of support organisations. Oracle customers have achieved significant improvements in their customer satisfaction ratings and substantially reduced costs by implementing these methodologies.

Example: A leading business equipment company set a strategic management directive to lower service costs by reducing the call time for billing and technical assistance calls while providing customers with better self-service. The company replaced multiple home-grown intranet systems used by 1,100 agents with Oracle Knowledge for Contact Centre. As a result, call research time was reduced by 50 percent on average, Web self-service inquiries achieved better than 75 percent initial resolution, and the company experienced a nearly 80 percent reduction in e-mail during comparable periods in which postal rate hikes would have been expected to create large spikes in inquiries.

Task How to provide a better experience to the customer? Discuss.

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13.3.3 Best Practice 3: Foster Unstructured Knowledge Creation

The knowledge-centred support (KCS) methodology is well accepted in many customer service organisations—especially when it comes to creating and managing content. These principles foster unstructured creation of knowledge, designed to develop useful information "organically." KCS promotes creating content as a by-product of solving problems; evolving content based on demand and usage; developing a knowledgebase of collective experience; and rewarding collaboration, sharing, and improving content.

Social networking can serve as a valuable tool in encouraging unstructured knowledge development. By embracing the social network as part of your knowledge management strategy, you can facilitate rapid, low-cost content development through customer communities that support themselves while contributing content that can be incorporated into your knowledge base.

The following are some simple ways you can encourage social contributions from contact centre agents as well as customers:

- Provide a simple way to recommend content through social channels such as company-sponsored forums and communities or online feedback forms. Be sure to use this feedback to rework content to bring it in line with user needs and expectations.
- Enable users to comment on the value of contributions, and begin building social reputation ratings for content contributors. This motivates people to contribute quality posts, care about peer reviews, and enhance their reputation ratings as designated expert contributors.
- Offer subscriptions to help communities stay up to date on what matters most to them.
- Monitor the quality of social media by actively monitoring channels and conducting regular surveys.
- Tightly embed social channels into the self-service search process, so that customers are aware of discussion topics in their areas of interest.

13.3.4 Best Practice 4: Focus on What You Don't Know

As we've all learned the hard way, ignorance is not bliss. Monitoring the success of your knowledge management initiative in terms of your goals and objectives is important. But of even greater value is discovering when and why inquiries fail, because these failures provide the greatest opportunity for improving the overall experience.

Using analytics to identify where users do not succeed enables you to continuously refine and improve the quality of searching and content. Analytics can help you

- Discover where the search process broke down and determine why you may not have understood the true intent of the user's initial inquiry
- Identify where your online solutions are helpful, incomplete, or out of date
- Understand new question trends and identify gaps in your solutions to those questions
- Ascertain user behaviour pertaining to common inquiries (for example, what they do next and what additional questions they ask)

Did u know? By understanding successes, failures, and trends, you can continuously create more-relevant and intentional experiences that will optimise contact centre operations as well as improve online customer self-service.

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One important response to the discovery of a new trend or that knowledge is missing is to push content into the hands of those that desperately need it as quickly as possible—even if that content is not perfect. This is crucial when new products are launched, causing a spike in calls and e-mails for assistance. In such situations, less can be dangerous: it's better to put ideas and trial answers into users' hands as soon as the need arises—a process social networking facilitates by enabling you to leverage the user community to develop information and answers. Just make sure users have a mechanism for rating these new solutions, and then review your progress daily to refine and improve your answers.

13.3.5 Best Practice 5: Think Globally

We've stressed the importance of starting with a reasonable scope for your knowledge management initiative and not trying to implement everywhere all at once. But this does not mean that knowledge management is just a departmental or discrete solution useful only to the call centre or Web self-service.

Knowledge management can have broad application across the enterprise. As such, it should be treated as a corporate initiative, not just a departmental point solution. Knowledge management can

- improve employee productivity with intranets for human resources, product development, and professional services.
- boost the performance of your sales force automation operations with sales intelligence portals.
- increase the efficiency and effectiveness of relationships with partners and vendors.

Even when you're starting with a classic customer service implementation, it's important to enlist the support and participation of groups outside the customer care organisation by illustrating the value to be gained from knowledge management.

Example: The marketing department will want to help develop and monitor content when you can show that relevant offers on the self-service support site generate higher commerce spending.

Thinking globally also requires planning for the use of knowledge management across multiple channels. This is important, because how solutions need to be structured can vary considerably, depending on the channel in which they're used.

Example The answer to a question delivered via e-mail can be lengthy and detailed, because the customer can spend time reviewing the response.

However, a lengthy response is not appropriate for a chat interaction and some content simply may not work for a given channel.

Example: Technical solutions that require some level of expertise typically serve only to frustrate self-service customers. In such cases, the answers are better delivered by phone agents who understand how to walk the customer through the resolution process.

It's also important to structure knowledge for multilingual deployment. Here are some high-level guidelines for content translation:

- Apply the 80/20 rule to the content designated for translation. Focusing on mature products with stabilised content enables more-affordable translations and improves resolution rates.

Notes

- Adhere to document standards and specifications. Use global editing and authoring specifications to ensure consistent terminology and make maximum use of common phrases.
- Leverage industry-standard translation tools. Take advantage of available tools to minimise customisations and keep translations affordable.

Self Assessment

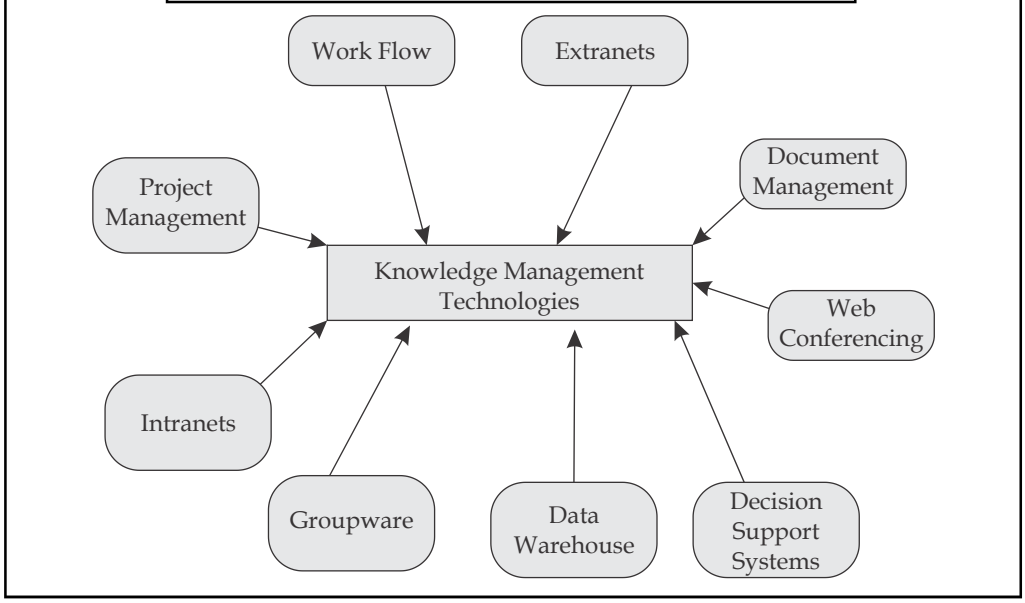
State whether the following statements are true or false:

8. The cost savings achieved from a contact centre deployment can be used to fund subsequent rollouts.
9. The decision to expose content to customers and prospects who visit your website does not lead to information overload.
10. The old 80/20 rule—80 percent of inquiries can be answered by 20 percent of content—is highly relevant to a knowledge management implementation.
11. The integration between content and inquiry enables the customer to provide feedback about the effectiveness of the inquiry response.
12. The knowledge-centred support (KCS) methodology is not well accepted in many customer service organisations.
13. Knowledge management cannot increase the efficiency and effectiveness of relationships with partners and vendors.

13.4 Supporting Technologies

The following Figure 13.3 reflects the main technologies that currently support knowledge management systems.

Figure 13.3: Technologies Supporting Knowledge Management



Source: http://www.unc.edu/~sunnyliu/inls258/Introduction_to_Knowledge_Management.html

Notes

These technologies roughly correlate to four main stages of the KM life cycle:

1. Knowledge is acquired or captured using intranets, extranets, groupware, web conferencing, and document management systems.
2. An organisational memory is formed by refining, organising, and storing knowledge using structured repositories such as data warehouses.
3. Knowledge is distributed through education, training programs, automated knowledge based systems, expert networks.
4. Knowledge is applied or leveraged for further learning and innovation via mining of the organisational memory and the application of expert systems such as decision support systems.

Notes All of these stages are enhanced by effective workflow and project management.

Self Assessment

Fill in the blanks:

14. An organisational memory is formed by refining, organising, and storing knowledge using ..... repositories.
15. Knowledge is applied or leveraged for further learning and innovation via ..... of the organisational memory and the application of expert systems.

Case Study

Turning Business Information into an Asset

This case study describes how to turn your business information into an asset.

Background

A major Automotive Manufacturer had over time (mostly due to organic growth) created multiple content repositories in almost every functional area of their business. Many of these data repositories and web sites were designed without a strategy, master plan or consistent standards. The result is that Sales, Customer Service, Marketing, Engineering, and Product managers have a difficult time accessing and acquiring accurate and trusted information, and have no way of knowing which version of the truth is the most recent or cogent. Not only is the accessing of good, managed information key to a company's performance, but the costs involved of the wasted management time, poor Customer Service numbers, care and maintenance of multiple information sources can easily impact the bottom line and skyrocket out of control.

For example, the Customer Service desk had 87 separate sources available to them to answer customer questions. Of these sources: 70% were accessible on a number of individually managed web sites, 20% within applications or internal data bases, and 10% were buried and "maintained" by a single subject matter expert (SME).

Contd.....

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Desired Solution

Access to everything in one place with a "Google like" search interface and function: Design the system to have a single point of management and control, while still allowing for a multiple group of users to have timely and consistent access.

Design Approach & Testing

Utilising the design thinking process *context phase*, the team worked closely with Customer Service representatives to understand the current process and barriers to call resolution including the identification of all content sources; prioritising the top 20, then rapidly developing low fidelity prototypes of the user experience.

Then, the *ideation phase* created a user-centred design in order to consolidate the information into a single dashboard experience. Prototypes of these design concepts were created as low fidelity prototypes for evaluation by multiple end-user groups, adjacent stakeholders, and executive sponsors. In addition, the process created a robust taxonomy, controlled vocabulary, and metadata model to ensure consistent data formatting, tags with access to source, version, and improve findability using search technology.

To ensure adoption of this new solution, the team developed a Organisational Change Management (OCM) plan aimed at all affected stakeholders, which included a communications plan, a training plan, and a phased development and deployment strategy.

This approach was designed to providing the most appropriate content (of greatest value) that resulted in raising the completion percentages of Customer Service calls within the first contact.

Result

A consistent site experience with access to all 87 original sources of information was designed to provide a common database that yielded a single point of access and search, by a multiple number of uses. After the OCM plan was implemented, the results of this design thinking approach was significant and measurable:

- There was a 100% adoption rate by end users.
- An increase in customer satisfaction metrics over 2X our starting baseline within 12 months of deployment.
- A significant reduction in call escalation.

This holistic, Design Thinking driven solution was so successful that it was deployed to other departments and became one of the most impactful Enterprise solutions for product knowledge management throughout the company. Five years later, it remains a valuable success story to management, as well as a template for both existing and future systems.

Questions

1. Discuss how *ideation phase* consolidated the information into a single dashboard experience.
2. What were the results of the design thinking approach after the implementation of OCM plan?

Source: http://biznik.com/articles/knowledge-management-case-study

Notes

13.5 Summary

- Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets.
- One of the biggest challenges behind knowledge management is the dissemination of knowledge. People with the highest knowledge have the potential for high levels of value creation.
- Knowledge based systems includes all those organisational information technology applications that may prove helpful for managing the knowledge assets of an organisation, such as Expert systems, rule-based systems, groupware, and database management systems.
- Knowledge management is the new imperative for the service and support organisation.
- Successful knowledge management projects start with a realistic scope and precisely defined goals and objectives.
- The decision to expose content to customers and prospects who visit your Website can lead to information overload.
- The Knowledge-Centred Support (KCS) methodology is well accepted in many customer service organisations—especially when it comes to creating and managing content.
- Monitoring the success of your knowledge management initiative in terms of your goals and objectives is important.

13.6 Keywords

Collaborative Tool: A collaboration tool is something that helps people collaborate.

CRM: CRM (customer relationship management) is an information industry term for methodologies, software, and usually Internet capabilities that help an enterprise manage customer relationships in an organised way

Groupware: Groupware refers to programs that help people work together collectively while located remotely from each other.

KCS Methodology: Knowledge Centred Support (KCSSM) is a methodology for capturing, authoring and publishing information that is relevant to the support processes for an organisation.

Knowledge Asset: A Knowledge asset is any type of knowledge held or in use by an organisation.

Knowledge Management: Knowledge Management (KM) refers to a multi-disciplined approach to achieving organisational objectives by making the best use of knowledge.

Knowledge: Knowledge is the ability to make effective decisions, and take effective action.

***Social Networking*:** Social networking is the practice of expanding the number of one's business and/or social contacts by making connections through individuals.

13.7 Review Questions

1. Explain the concept of knowledge management.
2. Describe the importance of knowledge management.
3. List the various applications of knowledge management system.

Notes

4. What are the benefits of Knowledge Management? Discuss.
5. Describe various best practices that can help to design and deploy a successful knowledge management solution.
6. The decision to expose content to customers and prospects who visit your website can lead to information overload. Comment.
7. Discuss the methods used to encourage social contributions from contact centre agents as well as customers.
8. How can you refine and improve the quality of searching and content by using analytics? Discuss.
9. What are the technologies that support knowledge management systems? Discuss.
10. Discuss the goals and objectives of knowledge management.

Answers: Self Assessment

1.	Knowledge	2.	Knowledge Management
3.	multi-disciplined	4.	Collaborative tools
5.	True	6.	True
7.	False	8.	True
9.	False	10.	True
11.	True	12.	False
13.	False	14.	Structured
15.	mining		

13.8 Further Readings

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Unit 14: Enterprise Architecture

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14.3.3 Step No.3 – Even if you use Proven Pattern, Write Skeleton that Proves your Architecture
14.3.4 Step No.4 – Write and Publish Architecture Documents and Diagrams
14.3.5 Step No.5 – Convince Architecture users why this Architecture is the Right One
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Objectives

After studying this unit, you should be able to:

- Define the concept of enterprise architecture
- Explain the importance of enterprise architecture
- Discuss various software architectural styles
- List the steps used in developing an enterprise architecture

Introduction

An Enterprise Architecture (EA) is a conceptual blueprint that defines the structure and operation of an organisation. Enterprise architecture is the business of architecting the enterprise. The intent of enterprise architecture is to determine how an organisation can most effectively achieve

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its current and future objectives. The goal of the process is to take the business strategy and translate it into effective change of the enterprise. The process itself involves creating key principals and models that describe the enterprise's future and enable its evolution. The scope of enterprise architecture includes the enterprise's people, processes, information, and technology and their relationships to each other and the external environment. Enterprise architects are the people who create the solutions to address the business challenges and support the enterprise in implementing those solutions. **Enterprise architecture** describes the practices used for documenting business strategies, business models, requirements, policies, etc.

14.1 Importance of Enterprise Architecture

Often it seems that considerable amounts of money are spent on IT systems and vendors, but that IT rarely delivers all that is promised. It often seems hard to launch a new product and difficult to get quality management reports. Instead, IT programmes always seem to take longer and cost far more then expected.

For most modern companies IT is an essential part of life and good IT is usually critical to taking or maintaining a leading place in the market. The difficulty is that too often there is too large a gap between the IT organisation and the rest of the business. This is reflected in all the classic problems where IT is seen to be a constraint on the business, instead of being a key factor enabling its success

What is vital in all of this is a central team of experts who sit on the boundary between the business strategy and the IT organisation. This team needs the skills to understand the industry and the company's direction in the market, and the necessary IT knowledge to enable the business to achieve its aims. Armed with these skills, these experts are then able to provide IT with a clear direction and high level guidance to deliver solutions. Whether this "team" is actually a single individual in a small- or medium-sized enterprise or a group of experts in a large tier 1 company, it is vital for a modern business to have this central control, vision and leadership for its IT operation.

Enterprise architecture is the name given to this process of leadership and control. It provides a link between the business strategy and the development teams who design the detailed technical solutions. Good enterprise architecture also provides governance over the IT organisation, fulfilling the role of ensuring that what IT delivers remains aligned to what the business needs. The role of the enterprise architects is to provide a clear singular vision for IT, and to work to ensure that vision is delivered.

The move to true enterprise architecture is not easy. It requires implementation of the full lifecycle, appropriately experienced resources and top level sponsorship to be successful. Culture, processes, roles and responsibilities and documentation all need to be in place and to be working effectively. Too often, clients are found to have implemented partial steps in the lifecycle, but critical gaps remain, leading to frustration for the leadership team and missed opportunities for all the cost savings and competitive advantages that good enterprise architecture leadership can deliver.

When enterprise architecture is working well, companies find that they are able to deliver change faster, IT costs come down – especially in the longer term, there are fewer failed IT programmes and it becomes much easier for senior management to get the information they want from the system.

Notes Because good enterprise architecture always works first from a businesses perspective, if it is implemented both fully and appropriately for the size and complexity of the business, then IT can truly create a faster, more efficient and cost effective organisation.

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Caselet

Enterprise Architecture will be Key Tool for Biz Strategy

The role of enterprise architecture, a framework laying down the company's operations and structure, is set to undergo a major change, according to findings revealed in a study by Infosys Technologies. "The role of enterprise architecture is changing. When it started off it was simply an IT-centric function, whereas today it aims to align IT with business," said Mr Sohel Aziz, AVP and Head-Strategic Technology & Architecture Consulting, EMEA at Infosys, in a release.

"We believe that the next stage in EA's evolution will make the discipline of enterprise architecture a central tool not for managing IT, but for implementing business strategy."

The survey asked 260 CIOs, Chief Architects, and business and IT managers why and how they are practicing enterprise architecture. Of the EA teams surveyed, 36 per cent actively participate in their company's strategic business planning. The research reveals that enterprise architecture has achieved the objectives of previous evolutionary stages – that it is helping IT to support the corporation; and that architecture is increasingly accepted as a tool for implementing business strategy across the enterprise.

The consensus among those surveyed is that enterprise architecture is now ready for the next step – to become a tool for transforming organisations by enabling flexibility and agility. It will focus not only on IT, but also on defining a platform for implementing business strategy, and joint value creation with business partners and customers. However, integration and information integrity are concerns.

Source: http://www.thehindubusinessline.in/bline/2007/09/01/stories/2007090152000400.htm

Self Assessment

Fill in the blanks:

1. ..... is the name given to this process of leadership and control.
2. Enterprise architecture provides a link between the ..... and the development teams who design the detailed technical solutions.
3. The role of the ..... is to provide a clear singular vision for IT, and to work to ensure that vision is delivered.

14.2 Software Architecture Styles

Software architecture is the representation of a software system at the highest possible level of abstraction. It is the representation of the earliest design decisions that need to be made in order to build a software system. Software architecture is mainly a collection of components that make up the software system. These components are also called software elements.

Software architects use a number of commonly recognised styles to develop the architecture of a system. Architectural style implies a set of design rules that identify the kinds of components and connectors that may be used to compose a system or subsystem, together with local or global constraints that are implemented. Components, including encapsulated subsystems, may be distinguished by the nature of their computation. For example, whether they retain state from one invocation to another, and if so, whether that state is available to other components.

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Component types may also be distinguished by their packaging of the ways they interact with other components.

Did u know? Packaging is usually implicit, which tends to hide important properties of the components.

To choose an appropriate style, two kinds of information are required:

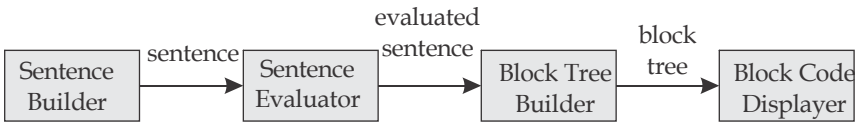
1. careful discrimination among the candidate architectures and
2. design guidance on how to make appropriate choices.

Architectural styles have also been referred to as architectural patterns. Eight such patterns have been identified. We shall discuss them now, highlighting their merits and demerits and their specific areas of use.

14.2.1 Pipeline

This style is suitable for applications that require a defined series of independent computations to be performed on ordered data. This pattern attempts to decompose the problem into a set of computations, or filters, with operations, called pipes to stream the data from one process to another. The filters interact only via pipes. The Block Builder architecture can be modelled as a pipeline, as seen in figure 14.1. Each of the four components can be represented by filters, with the pipe between any two successive filters taking the intermediate output of the first filter and feeding it into the next filter.

Figure 14.1: Pipeline Architecture for Block Builder



Source: http://etd.lsu.edu/docs/available/etd-07082004-152330/unrestricted/Banerjee_thesis.pdf

14.2.2 Data Abstraction

This style is suitable for applications in which a central issue is identifying and protecting related bodies of information, especially representation information. When the solution is decomposed to match the natural structure of the data in the problem domain, the components of the solution can encapsulate the data, the essential operations on the data, and the integrity constraints, or invariants, of the data and operations.

14.2.3 Communicating Processes

This process is applicable for applications that involve a collection of distinct, largely independent computations whose execution should proceed independently. The computations involve coordination of data or control at discrete points in time. As a result, correctness of the system requires attention to the routing and synchronisation of the messages. We can see clearly that the Block Builder system does not have architecture of this style, because every next module depends on the output of the previous module.

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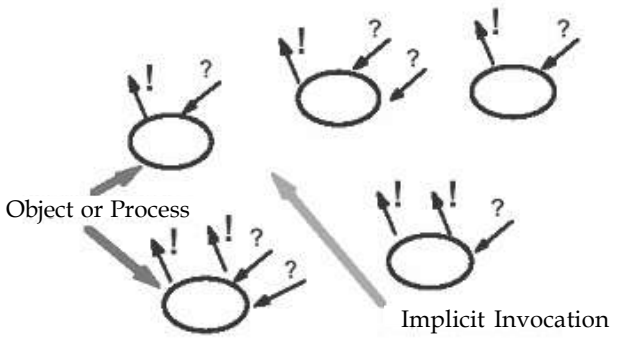
14.2.4 Implicit Invocation

This style suits applications that involve coupled collection of components, each of which carries out some operation and may in the process enable other operations. These are often reactive systems.

Figure 14.2: Representation for Implicit Invocation



Source: http://etd.lsu.edu/docs/available/etd-07082004-152330/unrestricted/Banerjee_thesis.pdf

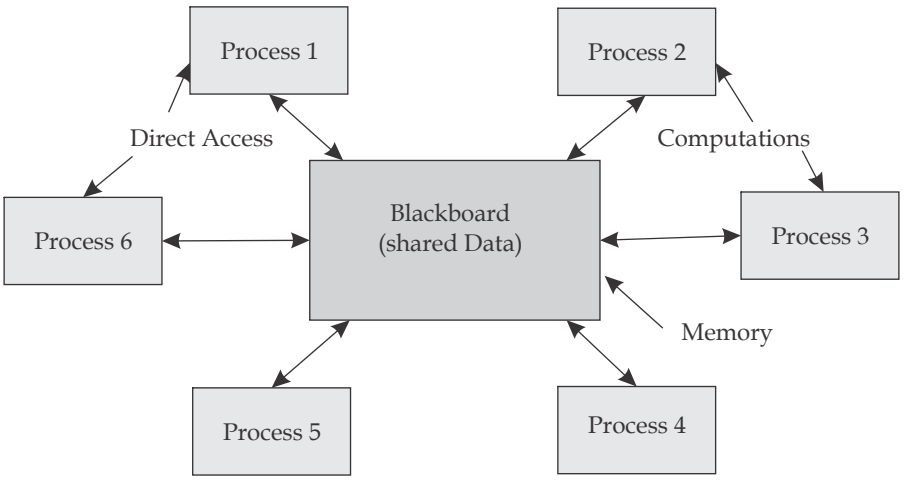
Task Make distinction between data abstraction style and implicit invocation style.

14.2.5 Repository

This style is suitable for applications in which the central issue is establishing, augmenting, and maintaining a complex central body of information. Typically the information must be manipulated in a wide variety of ways.

Example: An example of a repository or blackboard architecture may be the management of work allocation process in a company.

Figure 14.3: Repository or Blackboard Architecture



Source: http://etd.lsu.edu/docs/available/etd-07082004-152330/unrestricted/Banerjee_thesis.pdf

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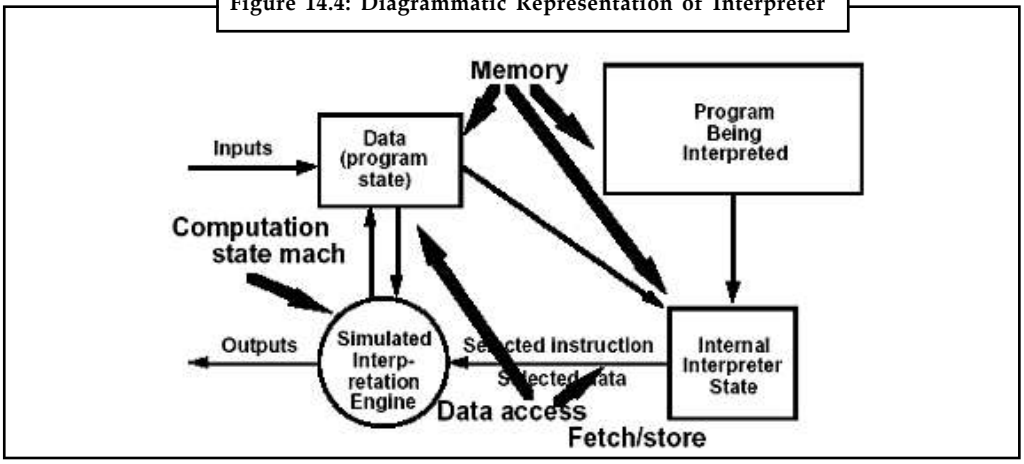
Example: A repository is a Business-to-Consumer (B2C) website where a person who has a job to be done posts his requirement on the website, and people interested in doing that job can post their requests, and then the person who posted a job can allocate the job to one of these contenders depending on their qualifications and abilities.

14.2.6 Interpreter

The interpreter architectural style is suitable for applications in which the most appropriate language or machine for executing the solution is not directly available. The pattern is also suitable for applications in which the core problem is defining a notation for expressing solutions, for example as scripts.

The best example of this type of architectural style is the interpreter for any programming language.

Figure 14.4: Diagrammatic Representation of Interpreter

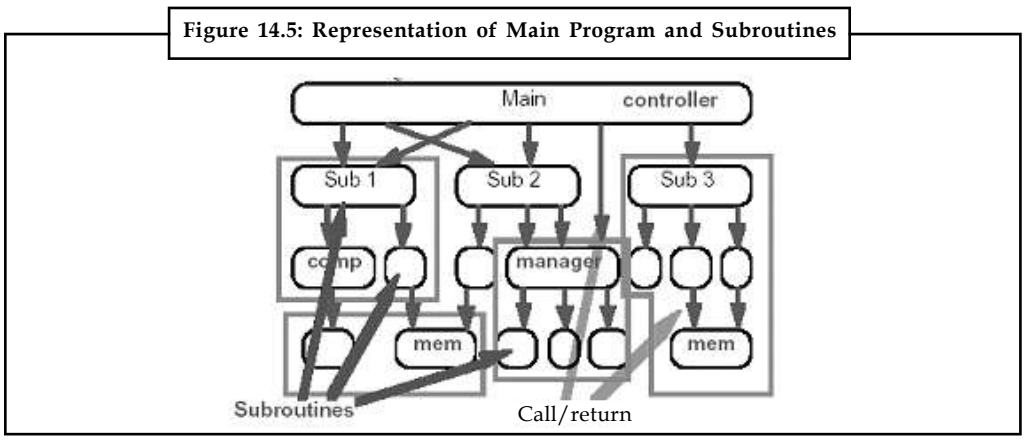


Source: http://etd.lsu.edu/docs/available/etd-07082004-152330/unrestricted/Banerjee_thesis.pdf

14.2.7 Main Program and Subroutines

This style suits applications in which the computation can appropriately be defined via a hierarchy of procedure definitions. It is usually used with a single thread of control. The Block Builder can be definitely represented in this architectural style because the software is written in C, a procedural language.

Figure 14.5: Representation of Main Program and Subroutines



Source: http://etd.lsu.edu/docs/available/etd-07082004-152330/unrestricted/Banerjee_thesis.pdf

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14.2.8 Layered

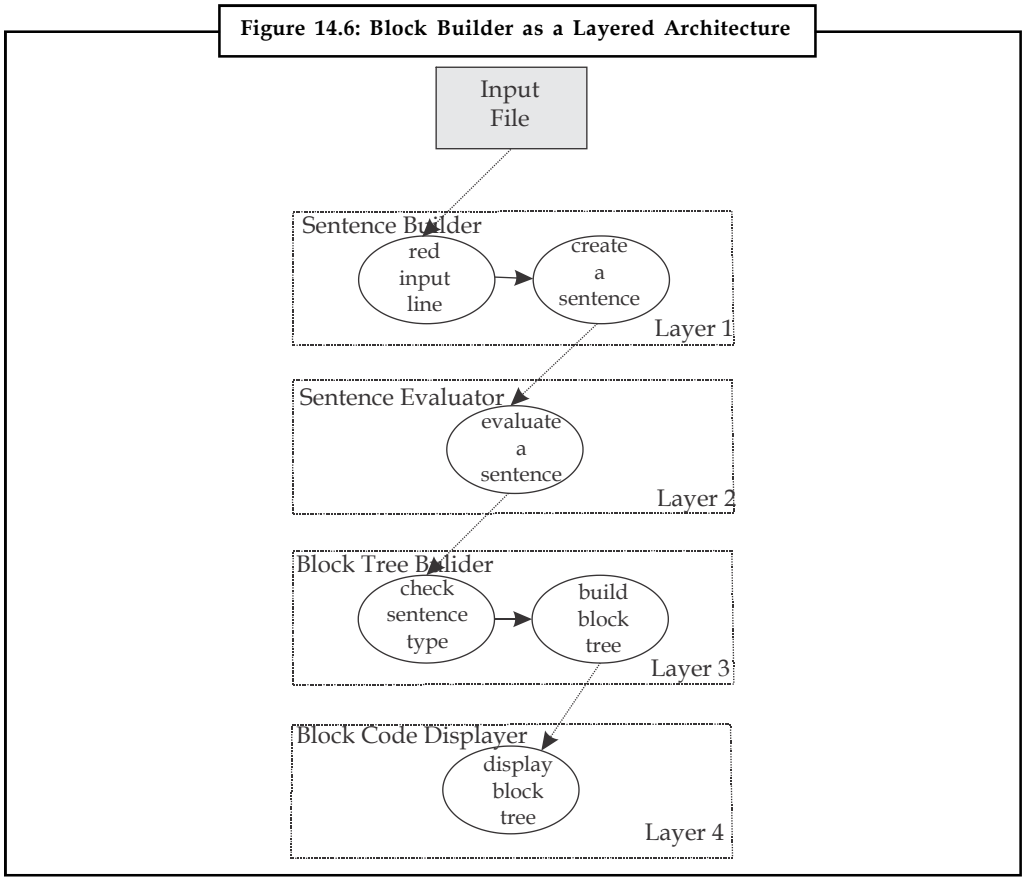
This architectural style is suitable for applications that involve distinct classes of services that can be arranged hierarchically. Often there are layers for basic system-level services, for utilities appropriate to many applications, and for specific tasks of the application. To date, the layered architectural pattern has been used mostly to model message-passing situations. But this architectural style has the capabilities to model other kinds of problems, for which it is not generally used. Almost all architectural representations of the pipeline style and the main program and subroutines style can be modelled by a layered style. So obviously the Block Builder system can be modelled as a layered architecture.

The strict layer structure as explained above is not too useful. But, by introducing some flexibility, the layered structure can be used to model many software systems.

Example: We might allow the layers to be transparent, i.e. interfaces from the lower layers show through as opaque so that only the interface defined by a layer can be used by the next layer up.

We can also define the method of interaction between processes in the same layer. In a strict layering model the components in the same layer cannot communicate, while in a lenient layering model such communication is allowed.

Figure 14.6: Block Builder as a Layered Architecture



Source: http://etd.lsu.edu/docs/available/etd-07082004-152330/unrestricted/Banerjee_thesis.pdf

We can also apply constraints on the direction of inter-layer communication direction. In a strict scheme, the inter-layer communication is unidirectional, while in a lenient scheme such

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communication can be bi-directional. Figure 14.6 shows the Block Builder system in the layered architecture style. The input to the software is a text file containing the C program for which we need to identify blocks. The architecture has four layers, one for each of the components identified in the decomposition model.

Notes The direction of communication between layers is unidirectional, but communication between the subcomponents in a layer is allowed, and this is again unidirectional.

Self Assessment

Fill in the blanks:

4. ..... is the representation of a software system at the highest possible level of abstraction.
5. ..... implies a set of design rules that identify the kinds of components and connectors that may be used to compose a system or subsystem, together with local or global constraints that are implemented.
6. ..... style attempts to decompose the problem into a set of computations, or filters, with operations, called pipes to stream the data from one process to another.
7. ..... style is suitable for applications in which a central issue is identifying and protecting related bodies of information, especially representation information.
8. ..... is applicable for applications that involve a collection of distinct, largely independent computations whose execution should proceed independently.
9. ..... style is suitable for applications in which the central issue is establishing, augmenting, and maintaining a complex central body of information.
10. The ..... architectural style is suitable for applications in which the most appropriate language or machine for executing the solution is not directly available.
11. ..... architectural style is suitable for applications that involve distinct classes of services that can be arranged hierarchically.

14.3 Developing an Enterprise Architecture

The steps for developing architecture are discussed below.

14.3.1 Step No.1 – Business Needs Analysis

This step doesn't use any technical abilities; nevertheless it's the most important step. Your architecture should be foundation for solving enterprise need(s) those foundations should be the base for system developing. Therefore in order to solve problems you need to understand first what are enterprises needs, problems and constrains. You can't base your architecture relaying on technical solution. Technical solution are the tools that you use in order to solve business needs but they shouldn't be one of the base problems that you trying to solve.

The output from this step should list all the enterprise needs, constraints and rules. Eventually your architecture should address all of those points in the list.

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Example: Such a list could contain the following points:

- Our goal is to develop competitive intelligent system of systems (SOS) to enable enterprise to be aware of potential threats.
- Every system represents one entity in our competitive intelligence SOS.
- Every system (entity) build from 3 layers (Visualisation, business logic and data provider). We want any system to supply and consume every one of those layers from/to other systems.
- Enable the user to show different entities visualisation on single page is a must. User can add visualisation layers of entities dynamically.
- Other entities (systems) should be added to SOS with minimum work.
- From the user point of view, he is working against one system. He doesn't care that systems develop by different development groups.
- All systems should be available 24*7. Even in maintains process.
- We want to minimise deployment of software to user's station.
- Systems should be followed the same development paradigm and system flow in order to enable using and adding infrastructures services.
- Systems and infrastructure should be based on Microsoft solutions.

14.3.2 Step No.2 – Set Architecture

In this step you should follow one of the architecture frameworks in order to create match architecture. Usually, most of the framework split this work into several viewpoints. Every viewpoint set different aspect of the architecture and usually every viewpoint is depending on the previous viewpoints. Most infrastructure split architecture into five viewpoints:

1. ***Business*** – Which we already describe.
2. ***Information*** – this viewpoint deals just with the data aspects of your architecture. In that viewpoint you should set which data your architecture should address (data storage, state data, transactions, etc') and how you decide to achieve it (relational DB, OODB, ORM, optimistic lock, etc').
3. ***Computational*** – Here you need to decompose needed functionality and build components that should perform needed functionality.
4. ***Engineering*** - This view point should set given architecture needed to create components and where every component should work eventually (layers, nodes and physical position).
5. ***Technical*** – Just in the end of the process after information, Computational and engineering set up it's time to decide which tools we should use in order to fulfil the previous requirements (Oracle, SQL Server, cache AB, Java spaces, etc).

In this step we usually use to go through proven architectural patterns in order to find the right architecture for the given need with respect to business needs, rules and constraints. One piece of advice, use just proven patterns. Don't tempt to use patterns that not used in production – real life systems, even if you convinced that this architecture pattern match perfectly your needs. Using non-proven patterns could cost you a lot in developing stage.

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14.3.3 Step No.3 – Even if you use Proven Pattern, Write Skeleton that Proves your Architecture

After you've got in mind what architecture you are going to use test it. Write simple system or systems based on the chosen architecture to demonstrate you ideas and test those ideas against enterprise needs. I also add checks for performance and scalability. Keep those skeletons that are required to use in up coming steps. If your skeletons find out any problems or you find out that one of enterprise needs, rules constraints didn't meet, then go back to step 2.

Caution Don't continue to step 4 until you are totally convinced that you meet all your targets.

In this step we use to show our skeleton systems to several group leaders and hear what they have to say about it.

14.3.4 Step No.4 – Write and Publish Architecture Documents and Diagrams

This is the tedious step but important one. The output should be several diagrams that demonstrate the architecture and documents contain every one of the architecture rules and constraints that yield from the architecture that you chose. Try to split those rules by the viewpoint that is mentioned in step 2. Don't forget that your documents will be the base for designers and developers so write them as clear as you can.

14.3.5 Step No.5 – Convince Architecture users why this Architecture is the Right One

Convince other is the toughest step. After you sure that you finished with architecture and published it so others can read your architecture it's time to convince the people that goanna use your architecture that this is the right choice. If your user doesn't convince that you done the right decisions they probably try to workaround your architecture. Use your skeleton system together with a lot of patience and start convinces groups of your users that your architecture works. Keep your mind open; if your users come up with problems that influence development process refer that issue. If that step raise problems that needs changes in your work that you done by now, change your work. It's better to adjust your work to developers needs then they won't accept your work and won't follow your architecture.

14.3.6 Step No.6 – Write Infrastructure that Support your Architecture

After you convince everyone that you have the right architecture it's time to write down infrastructure that will support your architecture (if you set MVC as visualisation pattern, supply infrastructure that implement MVC). That infrastructure should help developers to follow architecture with minimum effort.

Did u know? Architecture infrastructure is usually good place to implement system infrastructure that set at engineering viewpoint.

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14.3.7 Step No.7 – Engage in Development Process

While system is developing find a way to engage in the development process. Engaging in development let you check if your work really good. You can see if chosen pattern is hard or easy to implement, if the framework really help developers, if architecture really meets system goals, if you missed some point in your work. Shortening is a great way to get feedback about your work and to learn from mistake to make your next work more perfect.

Task Illustrate how to write and publish architecture documents and diagrams.

Self Assessment

Fill in the blanks:

12. Technical solutions are the ..... that you use in order to solve business needs but they shouldn't be one of the base problems that you try to solve.
13. ..... viewpoint deals just with the data aspects of your architecture.
14. ..... view point should set given architecture needed to create components and where every component should work eventually (layers, nodes and physical position).
15. In ..... viewpoint, you need to decompose needed functionality and build components that should perform needed functionality.

Case Study

An IT Transformation at Dell: An Oracle Enterprise Architecture

Long known as one of the world's largest manufacturers of personal computers, Dell has grown into not only a multinational hardware and infrastructure provider but also an IT services and solutions provider as well. Rapid growth led to regionally specific expansion from country to country. Dell ended up with unique manufacturing facilities, regional order management systems, and different operating processes and systems throughout the world.

Rhonda Gass, Dell's Vice President of IT Strategy, Technology & Governance, is charged with mapping out a future direction for the IT giant, with a three-year roadmap driven by Dell's Enterprise Architecture (EA) team. At an enterprise level this roadmap includes ten major programs, each of which involves investments in the tens of millions of dollars—and, in some cases, hundreds of millions of dollars. Some examples of these programs include: Global Quote to Cash, Global Service Delivery, Solution Selling, Global Manufacturing Execution, and Recurring and Usage based transactions.

Oracle is providing executive guidance for this transformative journey, working closely with Gass and her enterprise architects to establish a long-term view of the requisite processes, systems and technologies. Individual projects are undertaken to build general-purpose capabilities, not merely to fulfill immediate needs.

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The Problem: Creeping Diversity

Several years ago Dell began a transformation from a hardware infrastructure provider to a software solutions and services company. The 27-year-old company, which began as a domestic PC vendor, had moved rapidly to embrace other countries and product sets. To complicate matters, Dell acquired several large companies in 2010, including Perot Systems and three other companies in 2011.

A Process for Rationalization

In order to achieve its corporate objectives, Dell needed to rationalize its IT infrastructure. This transformative process involved consolidating multi-national systems to improve efficiency, reduce costs and enforce common standards.

The rationalization exercise helps an organization identify what standards to move towards as they eliminate the complexities and silos they have built up over the years, along with the specific technologies that will help them get there.

Depending on the company, rationalization could start with a technical discussion and be IT-driven; or it could start at a business level. Rationalizing involves understanding the current state of an organization's IT portfolio and business processes, and then mapping business capabilities to IT capabilities.

In Dell's case the EA team began by establishing an enterprise vision—a blueprint to guide individual projects. This blueprint laid out the structure of the enterprise in terms of its strategy, goals, objectives, operating model, capabilities, business processes, information assets, and governance.

Using the blueprint, enterprise architects can now inventory all applications and the underlying technology currently in use, and then map the applications to business capabilities to identify omissions and redundancies. Completing an inventory and mapping exercise has revealed overlapping and duplicate applications that are now candidates for consolidation.

Driven by Architecture

Dell's Enterprise Architecture team includes business architects, information architects, application architects, and infrastructure specialists. They have completed the rationalization process and are beginning the next wave: business process transformation.

These changes are as much cultural as they are technical. After creating a Center of Excellence (COE) to study its fundamental business processes, Dell organized the company around five key "process areas," each of which exists to enhance the customer value chain:

- Develop
- Market
- Sell
- Fulfill
- Support

These process areas are underpinned by a corporate process area, which supports the processes that support the customer. Process owners in each area are partnered with IT to establish the future systems that will run these areas based on process and capability needs.

Typically, after management identifies a market or defines a strategic direction, the IT department works with the appropriate business units to design the necessary IT solutions

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to support that initiative. Then IT develops the associated applications, data and technology infrastructure, and the process repeats itself each time another strategic initiative is defined. Over time, the company ends up implementing separate and disconnected IT systems without an overarching plan. Far from helping to shape the future of the company, IT becomes the bottleneck, continually reacting to the latest strategic initiative.

Dell has overcome this tendency with its architecture-driven approach. For example, one area where Dell identified silo-ed but well-intentioned plans was in the development and delivery of support tools. Various product teams (e.g. notebook team, desktop team, server team, etc.) were capturing diagnostic information for evaluation. From a customer viewpoint, consistency in how these capabilities are delivered is very important, leading Dell to think about its support to tools across all product lines and to use common develop/ design and support processes.

Gass believes that IT must lead the business in any type of large, transformative project. IT is the facilitator and IT can drive accountability in the business owners and help the various domains interlock.

A Foundation for Execution

Establishing business architecture involves capturing various "views" of the enterprise such as the business strategy, business capabilities, business processes, knowledge, and organization. In most EA projects, this information is used throughout the architecture development process to:

- Identify business and IT "owners" to sponsor and participate in the architecture review and transformation process
- Prioritize the areas in which to focus rationalization efforts
- Capture business capabilities and business process insight
- Eliminate redundancies and gaps in the applications portfolio
- Align IT initiatives with business strategies and goals

Dell has a systematic method for achieving these objectives. Every year its business architecture team sits down with the strategy planning office to review essential capabilities and complete a strategic plan. This plan typically focuses three to five years in the future. Gass and her team maintain a corporate-wide map of these capabilities that depicts specific business domains – what they call "process chevrons." This map provides a logical model of how Dell runs. The business architecture team looks for "capability gaps" and then interacts with the solution architecture team, the information architecture team, and the infrastructure team to fill those gaps. Dell's Enterprise Architecture team maintains three-year reference architecture for each of these domains, which they update each quarter.

Creating Business/IT Alignment

Dell prioritizes its IT investments by aligning them with the reference architecture and identifying the capabilities with the highest return on investment. Gass and her team enforce the technology reference models and provide an architecture review board to govern the transformation effort. The EA team periodically assesses the degree to which each project has realized the transition state on the way to the three-year reference architecture.

Dell has made it clear to its managers and business process owners that they don't "own" an organization or that organization's requirements. Rather, they own a capability area. Certain assets are associated with that area, including the business architecture, business

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processes, and production applications. "Organizations come and go, and programs come and go but the process owners are still left to manage those capabilities and that asset base," Gass explains.

Enterprise architects are not typically asked to define or optimize business processes, but they do need to be equipped to understand those processes in relation to the organization's overall business strategy. This knowledge helps to ensure that each department conforms to consistent business practices, processes and standards. EAs maintain a cross-domain perspective that represents the vision and requirements of the organization as a whole.

Similarly, while Enterprise Architecture does not necessarily include business process optimization and design, it has a clear role to play in the governance and monitoring of these processes, especially when they involve cross-domain IT capabilities. Enterprise architects are typically not process analysts. They define how a process interacts with other core processes, and how a process impacts the organization. To do this well they must understand the external and internal factors that influence the organization. External factors include things like compliance, which are imposed from without. Internal factors include specific IT standards and operational business requirements. Having solid governance practices in place makes it easier to anticipate business and IT risks and ensures compliance with corporate strategies, policies, and statutory regulations.

Dell's transformative journey, guided by its internal Enterprise Architecture team, echoes the approach that Oracle recommends to many other large companies. Oracle enterprise architects offer a deep understanding of how technology—including Oracle's vast product portfolio—impacts enterprise-wide alignment, governance, and business processes. Oracle's proven principles, roadmaps, and reference architectures, drawn from many successful engagements, allow companies to enforce best practices and adhere to architectural principles as they move from one tactical project to another, always considering the overall needs of the enterprise.

Question

According to you, what challenges Oracle faced in implementing Enterprise Architecture?

Source: www.oracle.com/technetwork/oea-dell-case-study-1521201.pdf

14.4 Summary

- Enterprise Architecture (EA) is a conceptual blueprint that defines the structure and operation of an organisation.
- Enterprise architecture is the name given to this process of leadership and control.
- Software architecture is the representation of a software system at the highest possible level of abstraction.
- Architectural style implies a set of design rules that identify the kinds of components and connectors that may be used to compose a system or subsystem, together with local or global constraints that are implemented.
- Software architects use a number of commonly recognised styles to develop the architecture of a system.
- Pipeline style is suitable for applications that require a defined series of independent computations to be performed on ordered data.
- Layered architectural style is suitable for applications that involve distinct classes of services that can be arranged hierarchically.

Notes

- First step of developing an enterprise architecture usually use to go through proven architectural patterns in order to find the right architecture for the given need with respect to business needs, rules and constraints.

14.5 Keywords

Architectural Style: Architectural style implies a set of design rules that identify the kinds of components and connectors that may be used to compose a system or subsystem, together with local or global constraints that are implemented.

Communicating Processes: Communicating processes are applicable for applications that involve a collection of distinct, largely independent computations whose execution should proceed independently.

Data Abstraction Style: This style is suitable for applications in which a central issue is identifying and protecting related bodies of information, especially representation information.

Enterprise Architecture: An Enterprise Architecture (EA) is a conceptual blueprint that defines the structure and operation of an organisation.

Interpreter Style: The interpreter architectural style is suitable for applications in which the most appropriate language or machine for executing the solution is not directly available.

Layered Style: This architectural style is suitable for applications that involve distinct classes of services that can be arranged hierarchically.

Repository Style: This style is suitable for applications in which the central issue is establishing, augmenting, and maintaining a complex central body of information.

Software Architecture: Software architecture is the representation of a software system at the highest possible level of abstraction.

14.6 Review Questions

1. What is Enterprise Architecture? Discuss the goal of enterprise architecture.
2. Discuss the importance of enterprise architecture.
3. What is software architecture? Also discuss the concept of software elements.
4. What are the various styles which are used to develop the architecture of a system? Explain.
5. Discuss the concept of pipeline architectural style.
6. What are communicating processes? Discuss with example.
7. Describe the use of repository architectural style with example.
8. Make distinction between layered and interpreter architectural style.
9. Describe the steps used in developing enterprise architecture.
10. Which style is suitable for applications in which a central issue is identifying and protecting related bodies of information? Explain.

Answers: Self Assessment

1. Enterprise architecture
2. business strategy
3. enterprise architects
4. Software architecture

Notes

5. Architectural style
6. Pipeline
7. Data abstraction
8. Communicating process
9. Repository
10. Interpreter
11. Layered
12. Tools
13. Information
14. Engineering
15. Computational

14.7 Further Readings

Books

Adrian Grigoriu. (2006). *An Enterprise Architecture Development Framework*, Trafford Publishing

James McGovern. (2004). *A Practical Guide to Enterprise Architecture*, Prentice Hall Professional.

Peter Weill. (2006). *Enterprise Architecture as Strategy: Creating a Foundation for Business Execution*, Harvard Business Press.

Scott A. Bernard. (2004). *An Introduction to Enterprise Architecture*, Author house.

Online links

http://www.c-sharpcorner.com/uploadfile/kalisk/software-architecture-styles/

http://fcw.com/Articles/2002/01/06/Three-steps-toward-developing-an-enterprise-architecture.aspx?Page=1

http://www.cs.toronto.edu/~jm/340S/PDF2/Styles2.pdf

http://cefarhangi.iust.ac.ir/download/courses/softwareengineering/E-Books/Ebook/Prentice%20Hall%20—%20A%20Practical%20 Guide%20To%20Enterprise%20Architectur.pdf