

E-Commerce

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Lecture 10

جامعة الجميع الذكية

تسعى لتكون الكيان الأول الذي يتبنى مبدأ المجتمع التعليمي
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MGM 212

Implementation and maintenance.



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Course Outline

Lecture 1: Introduction to e-business and e-commerce.

Lecture 2: E-commerce fundamentals.

Lecture 3: E-business infrastructure.

Lecture 4: - E-environment.

Lecture 5: E-business strategy

Lecture 6: E-procurement.

Lecture 7: E-marketing.

Lecture 8: Customer relationship management.

Lecture 9: Analysis and design.

Lecture 10: Implementation and maintenance.

- 1. Introduction.**
- 2. Alternatives for acquiring e-business systems.**
- 3. Testing.**
- 4. Changeover.**
- 5. Content management and maintenance.**
- 6. Measuring and improving performance Focus on of e-business systems.**

After completing this chapter the student should be able to:

1. Produce a plan to minimize the risks involved with the launch phase of an e-business application.
2. Define a process for the effective maintenance of an e-business system.
3. Produce a simple web page with links to other pages.
4. Create a plan to measure the effectiveness of e-business application using web analytics tools.

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1. Introduction:

We started Chapter 11 by considering the typical problems that confront users of e-commerce systems. It was shown that careful analysis and design can help minimize the risks of problems such as difficulties in navigation and slow site response. With good analysis and design, the **implementation** stage can be relatively straightforward: simply implementing the design. However, even with the best design, it is still necessary to follow **implementation activities** that test the system thoroughly and manage the transition or changeover from the old system to the new system or the launch of the site.

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Once an e-business application or e-commerce site is live, the maintenance phase is arguably of more significance than in traditional business application development since a successful application is dynamic. A dynamic e-business application means that content and services will be continuously updated in response to the environmental scanning. As competitors introduce new services and offers, and as marketing research reveals problems with the site from a customer perspective, or new opportunities, maintenance activities will be required for the e-business to remain competitive.

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2. Alternatives for acquiring e-business systems:

The basic alternative acquisition methods for e-business systems are similar to those for traditional business information systems:

1. Bespoke development. With a bespoke development, the application is developed from 'scratch' through programming of a solution by an in-house or external development team or systems integrator.

2. Off-the-shelf. In a packaged implementation a standard existing system is purchased from a solution vendor and installed on servers and clients located within the organization. Alternatively, free or low-cost open-source software may be used.

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- 3. Hosted software as a service (SaaS) solution.** With a hosted solution, a standard system is used, but it is not managed within the company, but using a third-party applications service provider variously known as 'on-demand', 'web services' or a 'managed solution'.
- 4. Tailored development.** In a tailored development, an off-the-shelf system or SaaS solution is tailored according to the organization's needs.

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3. Testing:

Testing has two main objectives: **first**, to check for non conformance with the business and user requirements, and, **second**, to identify bugs or errors. In other words, it checks that the site does what users need and is reliable. **Testing** is an iterative process that occurs throughout development. As non conformances are fixed by the development team, there is a risk that the problem may not have been fixed and that new problems have been created. Further testing is required to check that solutions to problems are effective.

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- The testing process

A structured testing process is necessary in order to identify and solve as many problems as possible before the system is released to users. This testing is conducted in a structured way by using a test specification which is a comprehensive specification of testing in all modules of the system. If the use-case method of analysis described in Chapter 11 is used then it will specify the different use-cases or scenarios to be tested in detailed test scripts. The comprehensive testing specification will also cover all the different types of test outlined in Table 12.1.

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Table 12.1

Types of testing required for an e-commerce site

Type of testing	Description
Developer tests	Code-level tests performed by developers of modules
Feasibility testing	Tests a new approach, often near the start of a project to make sure it is acceptable in terms of user experience
Module (component) tests	Checks individual modules have the correct functionality, i.e. correct outputs are produced for specified inputs (black-box testing)
Integration testing	Checks interactions between groups of modules
System testing	Checks interactions between all modules in the system
Database transaction taken	Can the user connect to the database and are transactions executed correctly?
Performance/capacity testing	Tests the speed of the system under high load
Usability and accessibility testing	Check that the system is easy to use, follows the conventions of user-centred design and meets accessibility requirements described in <i>Chapter 11</i>
Acceptance tests	Checks the system is acceptable for the party that commissioned it
Content or copy testing	Tests the acceptability of copy from a marketing view

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- Testing environments

Testing occurs in different environments during the project. Prototypes are tested in a **development environment** which involves programmers' testing data across a network on a shared server. In the implementation phase a special **test environment** may be set up which simulates the final operating environment for the system. This test environment will be used for early user training and testing and for system testing. **Finally**, the **production or live environment** is that in which the system will be used operationally. This will be used for user acceptance testing and when the system becomes live.

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4. Changeover:

Migration or changeover from a previous information system to a new system is particularly important for mission-critical e-business systems where errors in management of **changeover** will result in a negative customer experience or disruption to the supply chain.

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In this section we look at significant issues involved in managing this transition from previous systems to e-business systems and the transition from one version of an e-business system to the next. When introducing a new sell-side e-commerce system there are two basic choices. **First**, the company can fully test the system in a controlled environment before it goes live and thus minimize the risk of adverse publicity due to problems with the site. **Second**, the company can perform what is known as a 'soft launch'. Here, after initial testing, the site will be tested in a live environment where customers can use it.

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- Database creation and data migration

A final aspect of changeover that should be mentioned, and is often underestimated, is **data migration**. For an e-commerce system for a bank, **for example**, this would involve transferring or exporting data on existing customers and importing them to the new system. This is sometimes also referred to as 'populating the database'. Alternatively, a middleware layer may be set up such that the new system accesses customers from the original legacy database.

Before migration occurs it is also necessary for a member of the development team known as 'the database administrator' to create the e-commerce databases. **This can be time-consuming since it involves:**

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- Creating the different tables by entering the field definitions arising from the data modelling.
- Creating the different roles of users such as their security rights or access privileges.
- Creating stored procedures and triggers, which is effectively server-side coding to implement business rules.
- Optimizing the database for performance.

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- Deployment planning

A deployment plan is needed to put in place the hardware and software infrastructure in time for user acceptance testing. This is not a trivial task since often a range of equipment will be required from a variety of manufacturers. Although the project manager is ultimately responsible for deployment planning, many companies employ systems integrators to coordinate these activities, particularly where there is a national rollout.

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5. Content management and maintenance:

Sell-side e-commerce sites are continuously under development, even when they become live. The sites need to be dynamic to deal with errors reported by customers and in response to innovations by competitors. Additionally the content, such as information about different events or new product launches and price promotions, will need to be updated if the site is to generate repeat visits from customers.

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Buy-side e-commerce sites are less dynamic and are more akin to traditional business information systems, so in this section we will focus on maintenance of e-commerce sites, although this description will also apply to e-business implementations of intranets and extranets. What are the management issues involved with maintenance? **We will review the following:**

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- Deciding on the frequency and scope of content updating.
- Processes for managing maintenance of the site and responsibilities for updating.
- Selection of content management system.
- Testing and communicating changes made.
- Integration with monitoring and measurement systems.
- Managing content in the global organization.

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- Frequency and scope of content updating

The moment an e-commerce system is live it will require updates to the content and services. Different types of content updating can be identified, and a different approach will be required for each. We can apply the fault taxonomy of **Jorgensen**, to an e-commerce site to decide on the timing of the action required according to the type of problem. We can see that the approach is quite different from that for a traditional information system or packaged software that is distributed to thousands of customers.

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For example, with a mild problem such as a spelling mistake within software, it would be too costly to update and redistribute the software. With the e-commerce site, a spelling mistake, although trivial, can be updated immediately by correcting it on the web page or in the database or content management system where it is stored.

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- Maintenance process and responsibilities

For efficient updating of an e-commerce system, it is vital to have a clearly defined process for content and service changes. Different processes will apply depending on the scope of the change, as described in the previous section. We can identify two different types of changes – **routine content changes** such as updates to documents on the site or new documents and **major changes** where we make changes to the structure, navigation or services on the site.

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6. Measuring and improving performance Focus on of e-business systems:

We review measuring the effectiveness of e-commerce system in detail since it is a key part of managing an e-commerce initiative. Often a large investment will have been made in the site and senior managers will want to ensure that the investment is delivering its objectives. They will also want to find and rectify problems with the site or exploit approaches that are working well. We focus on measurement of sell-side e-commerce, since the approach is most advanced for this sector, but the principles and practice can be readily applied to other types of e-business system such as intranets and extranets.

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- Principles of performance management and improvement.

To improve results for any aspect of any business, performance management is vital. As **Bob Napier**, Chief Information Officer, **Hewlett-Packard**, was reported to have said back in the 1960s,

You can't manage what you can't measure.

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The processes and systems intended to monitor and improve the performance of an organization and specific management activities such as Internet marketing are widely known as **'performance management systems'** and are based on the study of performance measurement systems.

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Although we have stated that measurement is an important part of maintaining a web site, it is worth noting that the reality is that measurement is often neglected when a web site is first created. Measurement is often highlighted as an issue once early versions of a site have been 'up and running' for a few months or even years, and employees start to ask questions such as 'How many customers are visiting our site, how many sales are we achieving as a result of our site and how can we improve the site to achieve a return on investment?' The consequence of this is that performance measurement is something that is often built into an online presence retrospectively.

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Of course, it is preferable if measurement is built into site management from the start since then a more accurate approach can be developed and it is more readily possible to apply a technique known as **'design for analysis'** (DFA). Here, the site is designed so companies can better understand the types of audience and their decision points. **For example**, for Dell (www.dell.com), the primary navigation on the home page is by business type. This is a simple example of DFA since it enables Dell to estimate the proportion of different audiences to their site and at the same time connect them with relevant content.

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In this section, we will review approaches to performance management by examining three key elements of an e-commerce performance improvement system. These are, **first**, the process for improvement, **secondly**, the measurement framework which specifies groups of relevant Internet marketing metrics and, **finally**, an assessment of the suitability of tools and techniques for collecting, analyzing, disseminating and auctioning results. **We will review three stages of creating and implementing a performance management system.**

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- Stage 1: Creating a performance management system.

The essence of performance management is suggested by the definition for performance measurement used by **Andy Neely** of Cranfield School of Management's Centre for Business Performance. **performance measurement defines as** *(the process of quantifying the efficiency and effectiveness of past actions through acquisition, collation, sorting, analysis, interpretation and dissemination of appropriate data).*

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The need for a structured performance management process is clear if we examine the repercussions if an organization does not have one. These include: poor linkage of measures with strategic objectives or even absence of objectives; key data not collected; data inaccuracies; data not disseminated or analyzed; or no corrective action. Many of the barriers to improvement of measurement systems reported by respondents in **Adams et al.** also indicate the lack of an effective process. **The barriers can be grouped as follows:**

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1. **senior management myopia** – performance measurement not seen as a priority, not understood or targeted at the wrong targets – reducing costs rather than improving performance;
2. **unclear responsibilities** for delivering and improving the measurement system;
3. **resourcing issues** – lack of time (perhaps suggesting lack of staff motivation), the necessary technology and integrated systems;
4. **data problems** – data overload or of poor quality, limited data for benchmarking.

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Stage 2: Defining the performance metrics framework

Measurement for assessing the effectiveness of Internet marketing can be thought of as answering these questions:

1. Are corporate objectives identified in the Internet marketing strategy being met?

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2. Are marketing objectives defined in the Internet marketing strategy and plan achieved?
3. Are marketing communications objectives identified in the Internet marketing plan achieved?
4. How efficient are the different promotional techniques used to attract visitors to a site?

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Stage 3: Tools and techniques for collecting metrics and summarizing results.

Techniques to collect metrics include the collection of site-visitor activity data such as that collected from site log-files, the collection of metrics about outcomes such as online sales or e-mail enquiries and traditional marketing research techniques such as questionnaires and focus groups which collect information on the customer's experience on the web site.

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Chapter 12

