

Introduction to Management Information Systems

System Acquisition

Business Application

Learning objectives

- ▶ evaluate the different alternatives for acquiring IS;
- ▶ explain the importance of conducting a structured initiation phase for a BIS project;
- ▶ identify typical tangible and intangible costs and benefits associated with the introduction of an information system;
- ▶ apply different techniques to select the most appropriate options from different software, hardware and supplier alternatives;
- ▶ describe the importance of contracts to a successful outcome to information systems projects.

Why purchase an Information system?

- ▶ support decision-making
- ▶ impact on the internal & external environments
 - ▶ information needs
 - ▶ strategic advantage

why initiate an IS project?

- ▶ *Capability* - achieve something unable before
- ▶ *Cost savings* - core business process improved
- ▶ *Respond to change* - legislation, changing business environment
- ▶ *Reach* - expansion of customer base
- ▶ *Control* - better information delivery for managers
- ▶ *Competitive advantage* - e.g. home shopping service (Tesco)
- ▶ *Improved internal information flows* - improve over poor legacy systems
- ▶ *Improved external information flows* - business service, reputation
- ▶ *Improved customer service*

Acquisition

method of obtaining an information system

1. packaged - 'off-the-shelf'
2. bespoke
 - ▶ in house
 - ▶ software house
3. end-user developed

Bespoke development

developed from scratch

by IS professionals

to meet business needs

either

- ▶ in-house, employed by the organization
- ▶ third party - outsourced

Bespoke development

software tailored to exact needs & requirements

improve competitive advantage

but,

expensive

time-consuming

‘teething problems’ - bugs, new technology

Bespoke development

can be used by multiple organizations in the same field

- ▶ University student records
- ▶ UK police forces

packaged - off-the-shelf

software pre-written

broad functionality

used by different businesses

too many / not enough features

lower cost / less bugs

can be tailored to company needs

different models & suppliers can be put together

user-defined software

business users, non-IS professionals

ERP access across departments v end-user apps (limited scope)

department or personal

output driven

can be written by IT professionals or user-developed apps

user-defined software

used by those that develop it

can have bugs, bad design, not scale, not transfer

simple

- ▶ spreadsheet or database

complex

- ▶ production system / sales forecast

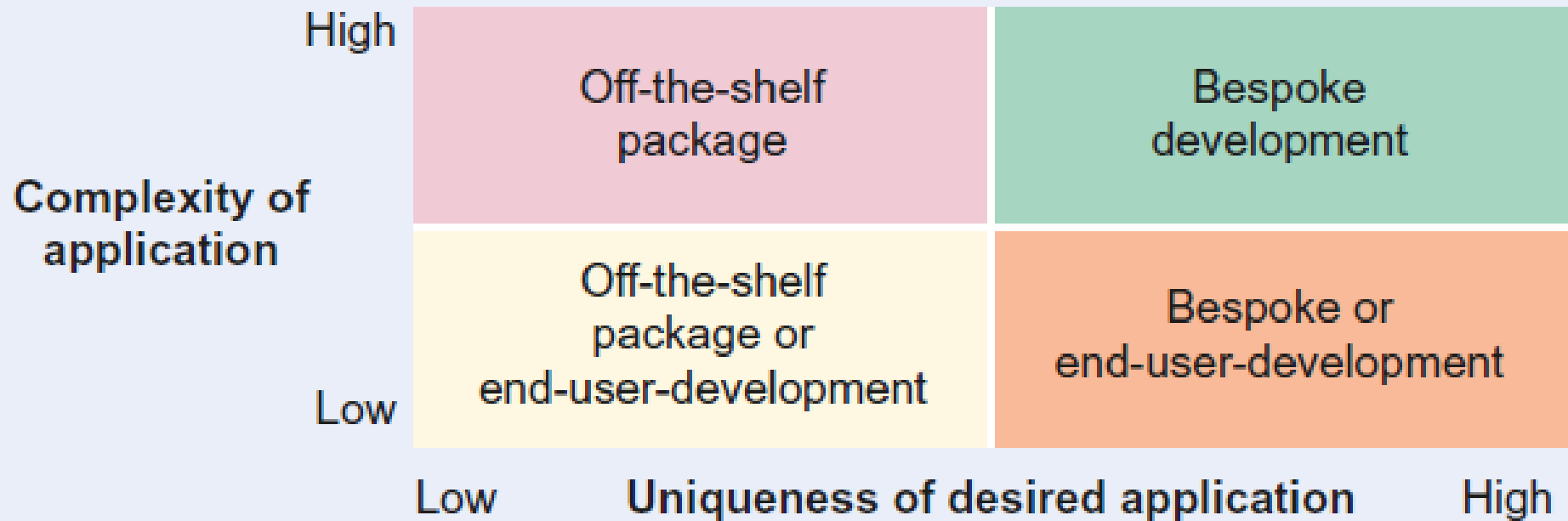
hybrid systems

E-business - joining legacy systems

integrate different vendors

Enterprise application integration (EAI)

acquisition factors



acquisition factors

1. time
2. cost
3. quality considerations

If IS requires quickly or requirements are straightforward,
a package or tailored package will be chosen

acquisition factors

IS complexity

- ▶ bespoke maybe only option
- ▶ tailored off-the-shelf possible

business uniqueness

- ▶ off-the-shelf less likely
- ▶ use of IT/IS professionals for bespoke option

existing apps

- ▶ integration complexity requires bespoke option
- ▶ more vendors now supporting integration

acquisition factors

organization size

- ▶ SME limited resources
- ▶ favour off-the-shelf

in-house expertise

- ▶ little in-house expertise -> use third parties
- ▶ vendors for software
- ▶ consultants

end-user expertise

- ▶ needed for end-user development
- ▶ helps with off-the-shelf packaged software

acquisition factors

Quality

- ▶ the number of bugs or errors found
 - ▶ good quality in terms of the number of bugs vs poor quality in terms of the business fit
- ▶ suitability of the software

Acquisition option	Delivery time	Cost	Quality: bugs	Quality: fits business needs
Bespoke in-house	Poor	Poor	Poor	Good
Bespoke software house	Good	Very poor	Medium	Medium
End-user development	Poor	Medium	Poor	Good
Tailored – off-the-shelf	Good	Good	Good	Medium
Standard – off-the-shelf	Very good	Very good	Very good	Poor

acquisition factors

- quality concerns, previous problems
- ▶ cost
- ▶ organizations
- ▶ in-house / expenditure
- ▶ requirements (complexity)
- ▶ uniqueness
- ▶ end user expertise
- ▶ existing IS / app software

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critical stages

- ▶ many information systems fail
- ▶ projects overrun in time or budget, or
- ▶ they do not deliver the benefits expected
- ▶ major factor is poorly managed **initiation stage**
- ▶ this is followed by the **feasibility study**
- ▶ these 2 stages are crucial to the success of the deployment and development of an information system

Risk Management

Must Consider Risks

1. Commercial and legal relationships
 2. Economic circumstances
 3. Human behaviour
 4. Political circumstances
5. Technology and technical issues
6. Management activities and controls
 7. Individual activities

Commercial and legal relationships

contractor unable to provide a valuable solution

- ▶ fails to meet time, cost, quality and performance objectives;

friction with contractor

- ▶ misunderstandings,
- ▶ unanticipated changes
- ▶ missed or delayed delivery,
- ▶ or some dispute

inadequate protection of software

- ▶ competitors taking advantage through copying
- ▶ high litigation cost and loss of market potential;

Economic circumstances

business return on investment in IT can be eroded

- ▶ changing consumer market conditions or
- ▶ advancements in software engineering

competitors may build software solutions

- ▶ more quickly,
- ▶ with greater functionality
- ▶ at cheaper cost;

software development stopped - costs too high

Human behaviour

work cannot be completed

- ▶ insufficient staff
- ▶ poor quality staff
 - ▶ lack of ability, training, motivation, and experience

Staff unable to effectively use

- ▶ hardware,
- ▶ application & system software
- ▶ database management systems

Political circumstances

project lacks support

- ▶ hidden agendas,
- ▶ factions within the organization,
- ▶ organizational culture
- ▶ other internal priorities;

lack of executive support

- ▶ owing to management playing politics
- ▶ users not supporting the project

Technology and technical issues

- ▶ inappropriate user interface
- ▶ inadequate user documentation
- ▶ users unable to use the new IS as intended
- ▶ users don't trust the software
- ▶ low user satisfaction
- ▶ poor software architecture/platform chosen
- ▶ slow or operational problems
- ▶ software limitations = time delays
 - ▶ project cancelled or restarted
- ▶ insufficient information obtained in analysis phase
 - ▶ not meet project objectives

Management / project issues

- ▶ an unreasonable project schedule and budget
- ▶ unrealistic restrictions placed on the project's budget, schedule, quality or level of performance
- ▶ continuous changes to the requirements by a client
- ▶ an unclear understanding of what constitutes final sign-off and solution delivery;
- ▶ failure to review daily progress
- ▶ lack of a single point of responsibility for deliverables,
- ▶ poor leadership project manager and/or steering committee
- ▶ poor analysis, design or construction

Individual activities

over-specification

- ▶ excessive levels of detail
- ▶ losing sight of the project's objectives

unrealistic expectations

- ▶ functionality and benefits over-sold

acquisition

- ▶ establish need and requirements
- ▶ decide on the method of acquisition
- ▶ make-or-buy
- ▶ outsourcing, off-the-shelf or bespoke solutions,
- ▶ evaluate different suppliers
 - ▶ economic, technical and operational feasibility

system requirements

request for proposals (RFP)

- ▶ a specification drawn up to assist in selecting the supplier and software
- ▶ after initial feasibility study
- ▶ issue an invitation to tender
 - ▶ purchaser = first four sections
 - ▶ different vendors = last two sections

Example request for proposals for a BIS

Executive summary (two pages) – includes company description, acquisition mission statement, ROI requirement, preferred technology strategy, acquisition timing.

Administrative information (three pages) – includes procurement timeline, short-list requirements, proposal submission preparation guidelines, evaluation criteria checklist.

Business case (six pages) – includes business benefit, description of current operations, expectations, critical success factors.

Technical case (fifteen pages) – this section acts as an acceptance list for the buyer. Includes overview of current IS operations, expectations for the new IS operations, system functional specs, expected system response time, document management requirements, integration requirements, exception handling, hardware requirements, software requirements, mass storage specifications.

Management (three pages) – can be reserved for short-list vendors to complete. Includes system acceptance criteria, project management plan, site preparation plan, training plan and schedule, delivery and installation plan and schedule, systems maintenance plan, documentation (description and pricing), qualification and experience (number of installations etc.), customer references, financial report.

Agreement (one page) – asks for vendor's pricing breakdown, itemised by definitions, so you can easily compare vendor to vendor.

comparing systems

Feature checklist - first-cut exclusion

- ▶ exclude products
 - ▶ missing a key function
 - ▶ not support OS

comparing systems

Feature checklist - detailed ranking

- ▶ simple checklists do not attach importance to features
- ▶ feature weight e.g. 0 - 100 points
- ▶ up the scores for the different products

comparing systems

Final selection using benchmarking

- ▶ benchmark against other organizations
 - ▶ what are their experiences,
 - ▶ what performance is the software achieving, a
 - ▶ re they an independent reference site?
- ▶ suppliers provide the software
 - ▶ test important functions
- ▶ Use company's own data & processes

comparing systems

Function to test	Scenario
1 Administration: add new user	How readily can a new user be added to the system or their personal details changed? How easy is it to set up the client (end-user) PC?
2 Compare actual against forecast sales	How easily can a user review the variance between actual and forecast sales and their trend through time?
3 Drill-down on a problem	If sales are down for one product line, how easy is it to identify the cause of that problem?
4 Export data	How easy is it to export part of the data for further analysis into a spreadsheet?
5 Configure data views	How easily can charts be customised to show a new KPI?

comparing systems factors

Eight key factors in selecting systems

1. **Functionality.** Does the software have the features described to support the business requirements?
2. *Ease of use* for both end-users and initial setup and administration.
3. *Performance* for different functions such as data retrieval and screen display. If used in a customer-facing situation, this will be a critical factor.
4. **Compatibility** or *interoperability*. How well does your solution integrate with other products? This includes what you are using now and what you will be using based on your strategic direction.
5. **Security.** This includes how easy it is to set up access control for different users and the physical robustness of methods for restricting access to information.

comparing systems factors

6. *Stability or reliability of product.* Early versions of products often have bugs and you will experience a great deal of downtime and support calls; hence the saying 'never buy one dot zero' (Version 1.0).
7. *Prospects for long-term support of product.* If the vendor company is small or likely to be taken over by a predator, will the product exist in three years' time? Is the company responsive in issuing patches and new features for the product? Is the company forming strategic alliances with other key vendors which will improve the product's features and interoperability?
8. *Extensibility.* Will the product grow? Are the features available to accommodate your future needs? Are the features available in the initial purchase or will you have to integrate with software from another vendor? As a rule of thumb, it is best if you can single-source software, or use as few vendors as possible: the system will have greater reliability than making different modules interoperate.

different suppliers

- ▶ limiting an assessment of new software to its technical merits or features a mistake
- ▶ software purchase is a long-term commitment
- ▶ company reliant on vendor support
 - ▶ good range of features, but
 - ▶ less support
- ▶ vendor may fail or taken over by a larger company
 - ▶ no support or upgrade versions

contract negotiations

contracts define

- ▶ which activities should happen
- ▶ when,
- ▶ who is responsible for them

e.g.

- ▶ outsourcing to a third-party
- ▶ custom or bespoke software,
- ▶ amendments to off-the-shelf software

well-defined contract

- ▶ all benefit from a reduced risk of failure

contract negotiations

For example,

- ▶ UK police terminated a fingerprint system development (mid-1990s)
 - ▶ after two years development, claiming £10 million in costs
- ▶ supplier, IBM, counter-claimed £19 million
 - ▶ client not made requirements clear
- ▶ = long legal battle

contract content

Schedule 1: Product specification and acceptance

- ▶ biggest section
- ▶ detail the features of the software
- ▶ acceptance criteria
- ▶ completion of all key features
- ▶ acceptable level of error
- ▶ ensure functions occur

contract content

Schedule 2: Input to project from client

- ▶ time for writing and reviewing requirements and prototypes;
- ▶ time for user acceptance testing (UAT);
- ▶ time for training;
- ▶ supply of test data;
- ▶ possibly supply of hardware and systems software
- ▶ support from internal IS function and project management

contract content

Schedule 3: Services to be supplied by contractor

- ▶ deliverables linked to milestones
- ▶ include deliverables from both client and supplier.
- ▶ Frequent monthly milestones should be set

Schedule 4: Support of system and warranty

- ▶ service-level agreement
- ▶ state how problems resolved
- ▶ define acceptable times for response

contract content

Schedule 5: Project plan

- ▶ key deliverables and milestones
- ▶ responsibility for project management

contract content

Schedule 6: Payment method

- ▶ fixed price - liked by client
- ▶ time and materials - liked by supplier
- ▶ payments tied into milestones
- ▶ suppliers may prefer regular monthly payments.
- ▶ penalty clauses or liquidated damages
 - ▶ late delivery late
- ▶ risk and reward clauses
 - ▶ financial incentives if it delivers early

The background features abstract, overlapping geometric shapes in various shades of purple, ranging from light lavender to dark indigo. These shapes are primarily located on the right side of the frame, creating a modern, layered effect.

Thank you!
any questions?