Thinking Strategically about Information Systems

Dr Danielle McConville, Queen's University Belfast, Examiner for F2 Information Systems

Investment in Information Systems (IS) often requires substantial resource, including the costs of purchasing hardware/software, necessary improvements to infrastructure including networks and storage and, critical to the success of the investment, the costs associated with employee time spent specifying, designing, implementing and testing. Much of the cost is incurred up-front, while the benefits are often realised over the long term and can be difficult to quantify.

For this reason, it is essential that organisations carefully consider IS investments in the context of the strategy and strategic objectives of the organisation. There are two facets of this:

1. When thinking about strategy and strategic objectives, organisations should consider what IS change might be required to facilitate achievement of these;
2. When thinking about an IS change, organisations should consider how this investment fits the organisation's agreed strategic objectives.

Learning Outcomes for F2 Information Systems (CPA Ireland, 2018) highlight that students should be able to:

- Discuss the role of information systems in today's competitive business environment.
- Analyse how information systems support various business strategies for competitive advantage.
- Analyse and discuss the challenges posed by strategic information systems and management solutions.
- Critically analyse Information Technology-based case studies, thus incorporating their strategic and practical knowledge of Information Systems to real-life business situations.

This article suggests four key questions that could be asked either by those within organisations considering IS investment or by students approaching case study questions on the F2 Information Systems paper.

Question 1: What is our strategy/what are our strategic objectives?
While various definitions are available, Laudon and Laudon (2018) identify strategy as the organisation's long-term (usually 5 years +) direction, which will be achieved by achieving a range of strategic objectives over the medium (2-5 years) and long term. Within an organisation, it is important that the strategy and strategic objectives are clear to those charged with making decisions about IS investment (or any investment, for that matter). In a case study question, the strategy of the organisation may be made explicit, or the student might be asked to discuss strategy more broadly. In the latter case, there are a number of approaches that might be taken.

Students might discuss Porter's four generic strategies: from Laudon and Laudon (2018) these include:

Low-cost leadership
Securing competitive advantage by keeping costs low. IS can assist in a range of ways, including: providing real-time, accurate information that facilitates cost monitoring and control; reducing processing times with increasing automation; minimising stock-holding by enabling better forecasting and replenishment.

Product differentiation
Securing competitive advantage by differentiating products from the offerings of competitors. IS can assist by, for example: using stored information to develop a more personalised, or faster, shopping experience for customers; using proprietary technology to enhance the product/buying experience.

Focus on market niche
Securing competitive advantage by serving a target market better than competitors. IS can assist by using (perhaps data mining) stored information on the target market to: develop a more personalised, or faster, shopping experience for customers; facilitate targeted marketing; utilise Customer Relationship Management software; engage in customer profitability (or risk) analysis.

Strengthening customer and supplier intimacy
Securing competitive advantage by developing loyalty with customers and suppliers. IS can assist by: using stored information as suggested above; facilitating Electronic Data Interchange between the organisation and its customers and suppliers (for example, allowing suppliers access to production schedules and stock levels); utilising Customer Relationship Management or Supply Chain Management software (affecting switching costs).

Alternatively, students might discuss the related strategic objectives, and per Laudon and Laudon (2018) these include:

Operational Excellence

Organisations continuously seek to improve the efficiency and productivity of their operations in order to achieve higher profitability. Information systems can assist in this by providing tools that allow organisations to operate more efficiently, examples might include the use of business to business e-commerce in procuring consumables; or real-time stock monitoring. Laudon & Laudon cite the example of Walmart and its RetailLink system, which digitally links suppliers to every store. As soon as a customer purchases an item, a replacement is shipped by the supplier.

New Products, Services, and Business Models

Information systems and technologies are a major enabling tool for firms to create new products and services, as well as entirely new business models. Examples include Apple's creation of new (to Apple- arguably mainstreaming existing products) products such as the iPod and iPad, and a new business model through iTunes.

Customer and Supplier Intimacy

When a business really knows its customers, and serves them well (the way they want to be served), the customers generally respond by returning and purchasing more. The result is increased revenues and profits. With suppliers, the more a business engages its suppliers, the better suppliers can provide vital inputs and this can lead to lower costs.

Competitive Advantage

Doing things better than competitors, charging less for superior products, and responding to customers and suppliers in real time all add up to higher sales and higher profits that competitors cannot match. Apple, Wal-Mart and UPS are prime examples of how companies use information systems and technologies to separate themselves from their competition.

Survival

Firms also invest in information systems and technologies because they are necessities of doing business. Information systems are not a luxury. In most businesses, information systems and technology are core to survival. Laudon and Laudon cite the example of Citibank, the first banking firm to introduce ATMs.

Students might be required to discuss the concepts of competitive advantage or value chain analysis (see Laudon and Laudon 2018) in order to situate their discussion of strategy. Remember that, in a case study question, marks are awarded *both* for demonstrating knowledge of syllabus *and* being able to apply this to the case. Students always need to take care to remember to clearly link these generic strategies to the information in the case, and to the specific question being asked.

Question 2: Are there aspects of our current IS that are inhibiting our ability to achieve our strategy/strategic objectives?

Every organisation can point to problems within its IS, and they can often be identified easily within a case study question. This question seeks to focus the mind on those problem areas that are either so significant, or so closely related to a particular strategic objective, that if action is not taken this could prevent the strategic objective being achieved. This helps to identify where resources should be focussed. Clearly these will be very specific to the organisation and its strategy, but some red flags might include:

- Lacking data to monitor progress towards strategic objectives or for decision making
- Systems failing to record and store data for later analysis
- Aspects of the system which are unconnected to each other and require manual processing to extract or use data
- Staff using the system find it slow and/or find ways to work around the system

These considerations should be informed by a good level of knowledge of possible improvements, for example, the potential benefits of enterprise applications such as Enterprise Resource Planning (ERP), Customer Resource Management (CRM) or Supply Chain Management (SCM) in such a scenario. This links to the next question.

Question 3: What improvements might help us to achieve our strategy/strategic objectives?

This question encourages consideration of a range of different improvements and how these might help in achieving strategic objectives. It is likely that there are a range of improvements that could be made, and a clear focus on the strategic objectives of the business helps to prioritise scarce resources. A simple example is that a business working to achieve greater customer intimacy might prioritise an investment in CRM over an investment in SCM or XBRL-enabled financial software. Again, this should be informed by a good level of knowledge of possible improvements (informed by the F2 Information Systems syllabus!).

Consulting to hear a wide range of views as to potential improvements would be important here, from end users of the system to specialists and vendors of relevant software/hardware. Buy-in at the senior management level will be crucial. Some examples of how to analyse the existing system, design and specify suitable improvements are included in the discussion of the Systems Development Life Cycle approach in Laudon and Laudon (2018).

Question 4: Can we justify this investment, at this time, in the context of our strategy as a whole?

This may be the 'killer question'. Returning to the earlier point that investment in IS often requires substantial resource, it may well be the case that at a given time improving the IS may not be the best use of funds. If the company is in a very challenging competitive environment, and its strategy focusses primarily on survival, then spending to improve the IS with high upfront costs and potentially long payback might not be appropriate. Similarly, if the organisation's strategy is to expand, or to fundamentally change the business, it may be better to wait until those changes have bedded down (and when it may be easier to secure support and funding for IS improvements). If an organisation is facing substantial strategic or organisational change, then there is a risk that by the time the system is implemented the needs of the business will have changed.

As with any substantial investment, those proposing any change will need to make a clear case that the benefits expected from the change outweigh its costs. In doing this, there is a need for critical analysis of expected benefits, clearly linked to the strategy of the organisation. Similarly, a comprehensive costing needs to take place – Laudon and Laudon (2018) suggest approaches such as Total Cost of Ownership. Another approach, particularly relevant for those in highly competitive markets or those seeking to use their improvement to gain competitive advantage is the competitive forces model, which may help to situate this investment in the context of competitor actions.

CPA Ireland (2018) CPA Syllabus 2019: Information Systems. Available at: https://www.cpaireland.ie/CPAIreland/media/Education-Training/Syllabus%202019/F2-Info-Systems.pdf

Laudon and Laudon, Management Information Systems: Managing the Digital Firm. Pearson 2018 / ISBN-13: 978-1292211756 15th edition.