

INFORMATION SYSTEMS

FORMATION 2 EXAMINATION - APRIL 2017

Time Allowed: 3 hours, plus 10 minutes to read the paper.

SECTION A

Answer **BOTH** Question 1 and Question 2 in this Section.

(Both Compulsory)

1. Arramed is a pharmaceuticals company, focussing on the competitive, but lucrative, health supplements market. It operates three main divisions: Production; Distribution; and Research and Development. The Production division handles all aspects of production including the procurement of raw materials – all production takes place in one location, at Arramed's Head Office in Dublin. The Distribution division is responsible for sales, marketing and distribution activities. This division operates from Arramed's Dublin Head Office and has branch offices in 12 other countries across Europe and the Middle East. In each country, Arramed sells to third-party distributors including pharmacy and health food chains. The Research and Development division is responsible for developing innovative new products and refreshing existing product lines. This division is geographically dispersed across four 'Centres of Excellence', on the campuses of leading universities in France, Sweden, Malaysia and Canada.

Following a number of profitable years, Arramed has a limited quantity of surplus funds available to invest. Each division has been asked to prepare a costed proposal of how they would spend that money, and the Board of Directors is meeting to consider these proposals. In summary, the proposals are:

Proposal 1 (Production division): Invest €100,000 in a replacement machine for Production Line A, increasing output from 26,000 tablets per day to 42,000 tablets per day.

Proposal 2 (Distribution division): Invest €50,000 in a Customer Relationship Management (CRM) system (and required hardware/software) to improve customer service by all branch offices and Head Office.

Proposal 3 (Research and Development division): Invest €40,000 in collaborative tools and technologies (and required hardware/software) to facilitate collaboration between the Centres of Excellence and with Head Office.

The Board can choose which proposal or combination of proposals to fund. However, after a lengthy discussion, no decision has yet been made. Anna Walker, Head of Operations, felt there was not yet enough information on the proposals at hand:

"I'm no expert in IT: I can see the benefit of investing in a machine to produce more tablets more quickly – but with these proposals about CRM and collaborative technologies, I find it hard to understand the benefits versus the costs we have in front of us. And surely we need to have some means of evaluating those benefits against costs?"

Tom Baker, Deputy Chief Executive, shared a broader concern:

"I think we need to seriously consider what our strategic objectives are as a company – just saying we want to continue to grow, but not how we're going to do that, isn't helping us generally, and certainly isn't helping us to make this decision. I feel like these proposals would take us off in different strategic directions, and we should have a conversation about what that direction should be".

REQUIREMENT:

- (a) Discuss what is meant by the term 'Customer Relationship Management (CRM)' systems, and evaluate the possible advantages of the proposal to invest in a CRM system for Arramed.
(6 marks)
- (b) Outline what is meant by the term 'collaborative technologies' (giving examples), and evaluate the possible advantages of the proposal to invest in collaborative technologies for Arramed.
(6 marks)
- (c) In response to Tom Baker's comment, discuss four possible strategic objectives that Arramed might pursue, and how investment in information systems (including the suggestions above) could enable the achievement of these objectives.
(8 marks)
- (d) In response to Anna Walker's comment, outline two methods of quantifying the potential value of Proposals 2 and 3 to Arramed.
(5 marks)

[Total: 25 Marks]

SUGGESTED SOLUTIONS

THE INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS IN IRELAND

INFORMATION SYSTEMS

FORMATION 2 EXAMINATION - APRIL 2017

SOLUTION 1

Purpose: To examine candidates' understanding of: CRM systems; collaborative tools; strategic objectives and the role of Information Systems in achieving such objectives; and methods of valuing Information Systems investments; and their ability to apply this knowledge to a given context.

Options: Candidates must answer all parts of the question. Answers should not vary significantly from those given below.

Essential components: Candidates must be able to show a depth of understanding of the areas identified above (under Purpose) and ability to apply this to the given context.

- (a) CRM systems capture and integrate customer data from all parts of the organisation. They consolidate the data, analyse it and distribute the results to the various systems and customer touch points across the enterprise. Well-designed CRM systems provide a single enterprise view of customers that is useful for improving sales and customer services.

CRM include aspects linked to sales (including sales force automation – helping staff increase their productivity by focussing sales efforts on the most profitable customers), service (providing information and tools to increase the efficiency of call centres, help desks and support), and marketing (supporting direct marketing by providing capabilities for capturing prospect and customer data, scheduling and tracking direct marketing etc.). Analytical CRM systems use operational data for data analysis, for example to identify buying patterns, create segments for targeted marketing and identify profitable and unprofitable customers.

Advantages of CRM systems include: improved customer service, lower direct marketing costs, increased marketing effectiveness, access to customer feedback for new product development, reduced sales costs, the ability to identify profitable and high lifetime value customers, reduced customer churn/improved customer loyalty. Advantages particularly relevant to Arramed – and to the critical importance of meeting customer needs given the risks to health if items are not delivered - include improved customer service. For innovation, the access to customer feedback may be important. From a financial perspective, identifying profitable customers, reducing customer churn and reducing marketing costs may be particularly useful.

3 marks each for explanation and relevant advantages

- (b) Possible tools and technologies include:
Email, instant messaging, wikis

Virtual meeting systems: videoconferencing and web conferencing, or telepresence (an integrated audio and visual environment that allows a person to give the appearance of being present).

Cloud collaboration services: online tools and services that allow file storage and synchronisation including cloud storage, file sharing and collaborative editing (examples include Google Drive) or cyberlockers – online file-sharing that allows users to upload files to a secure location for access by others (for example, Dropbox, Microsoft OneDrive). Some services such as Google+ offer 'social' aspects where users create a profile and can organise into 'circles' for specific sharing and collaboration, or 'hangouts' where users engage in group video chat.

Microsoft SharePoint – browser-based collaboration and document management platform combined with a powerful search engine and installed on corporate servers. It has a web-based interface and is closely integrated with Office desktop.

IBM Notes – collaborative software system with capabilities for sharing calendars, email, messaging, collaborative writing and editing, shared database access and electronic meetings.

Enterprise social networking tools – specialised tools for supporting social business e.g., Yammer, Jive and IBM Connections – employees are connected to each other through profiles, updates and notifications similar to Facebook features.

Possible advantages include:

Innovation: people working collaboratively in groups can come up with more innovative ideas for products, services and administration than the same number of people working in isolation. There are advantages of diversity and the ‘wisdom of crowds’ – this may be the primary benefit if the organisation seeks to innovate new drugs.

Increased productivity: people interacting and working together can capture expert knowledge and solve problems more rapidly than the same number of people working in isolation, particularly if geographically distant. There may be fewer errors as problems and solutions are discussed, reducing possible time delays.

Improved quality: People working collaboratively can communicate errors and corrective actions faster than people working in isolation. There are likely to be fewer errors as a result, and reduced time delays.

3 marks each for explanation and relevant advantages (note detailed discussion of these tools and technologies is not expected)

(c) 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. If Arramed were to focus on operational excellence, the CRM system may assist in making customer interactions more efficient – reducing the time taken in receiving orders, dealing with queries, complaints etc. and also potentially more effectively building relationships with customers – who seek to do business with Arramed in expectation of continuing high quality service. Alternatively, the collaborative tools may help to deliver operational excellence through the development of innovative, excellent products and in speeding these to market.

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. If Arramed wishes to focus on new products and services, then arguably the greatest potential would arise from investing in the collaborative tools and technologies that could facilitate the development of new products (and potentially services or even business models). However, a case could also be made that a CRM system may help Arramed to better understand what its customers’ needs and wants are: potentially also assisting towards the objective of developing new products, services or business models.

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. For Arramed, investing in CRM would be an obvious means of creating better customer intimacy – ensuring that customers receive the best possible service.

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. Both the CRM system and collaborative tools offer opportunities for Arramed to set itself apart from its competitors, respectively by offering better service, or more innovative products.

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. For Arramed, it may be particularly important to be innovative in their development of new, more effective drugs – in which scenario it would seem that the investment in collaborative technologies might be prioritised. On the other hand, they may perceive that their area within the drugs market is relatively stable, but that if they cannot deliver good customer service their competitors can replace them – in which case the CRM system might be prioritised.

4 x 2 marks

- (d) The total cost of ownership (TCO) model focusses on the direct and indirect costs of owning technology. It includes the cost of acquiring and installing hardware and software, as well as ongoing administration and maintenance costs, upgrades, technical support, and costs of housing and powering the technology, as well as costs relating to maintaining network connections. It should also include such items such as employee training, ongoing technical support and lost productivity if hardware or software failures cause the system to be unavailable for processing end user tasks. Crucially, this model seeks to identify total cost so that this can be compared to the expected (or actual, if applied retrospectively) benefits of the investment, such as increases in productivity and efficiency. These may be more difficult to predict than costs.

The competitive forces model suggests six factors that can be used to address the question of how much an organisation should spend on its IT infrastructure. These include:

- a. Market demand for your firm's services
- b. Your firm's business strategy
- c. Your firm's IT strategy, infrastructure and cost
- d. Information technology assessment: where is the company's IT in relation to current trends?
- e. Competitor firm services offered
- f. Competitor firm IT infrastructure investments (benchmark IT expenditures against competitor firms)

Completing such an assessment may be time consuming and costly, and it may not be possible to adequately answer all of the questions posed: for example, parts e and f (above). However when compared to total cost of ownership it acknowledges that the appropriate level of IT infrastructure investment is a function not only of internal matters but also environmental factors, and a source of potential competitive advantage.

2x2 marks for possible models, 1 mark for analysis of these. Candidates who discuss how to assess value without referring to these models will receive some credit.