MET2 Paper 2, 24 May 2010 - Crib

Question 1 Answer:

a)

> A manufacturing strategy is defined by a **pattern of decisions**, both structural and infrastructural, which determine the **capability** of a manufacturing system and specify **how it will operate** in order to meet a set of **manufacturing objectives** which are consistent with the overall **business objectives**.

I would expect a brief discussion of the emboldened words.
Pattern of decisions - indicate the decision areas or types of decision - One such set is:, facilities, capacity, vertical integration, processes, control policies, human factors, quality, suppliers , new product introduction (other sets cover similar areas.)
Capability - defines what the system is capable of, the idea of competencies may be introduced here
How it will operate - strategy is a statement of "how" as well as "what" (important) manufacturing objectives - what the manufacturing system must achieve in terms of products, quality, time , cost, flexibility etc.
Business objectives - relating marketing, financial and product objectives that specify what the business will do in the future
Better students may emphasise the aspects of internal and external consistency among decision areas and objectives and talk about the concepts of 'fit'. They may also use Hofer and Schendel's hierarchy model to position manufacturing strategy within the overall context of strategy.
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b) The market based view of strategy is based on deriving manufacturing objectives from market requirements, and then developing a set of actions to meet these objectives.

Key points:

- Recognising different product/market groups
- Defining order winning and order qualifying criteria
- Linking manufacturing objectives to these criteria
- Choosing patterns of actions to meet these objectives

Better students may discuss the 'importance-performance' matrix as a way of prioritising objectives and hence actions.

The resource based view of strategy is based on recognising and developing manufacturing capabilities and understanding how resources can be developed, controlled and coordinated to continually build such capabilities.

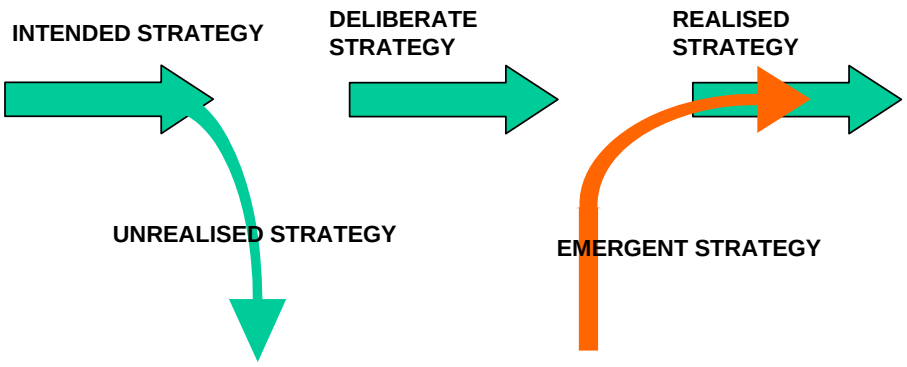
Key points:

- Describing different types of resource – tangible and intangible
- Identifying criteria which are used to assess the value of resources
- Discussing coordination and control

Better students may use a model to help describe the architecture of competences, showing the fractal nature.

Although the different views approach strategy from the opposite ends of the manufacturing activity – one the market, one the resource – their effective reconciliation is the key to a successful and sustainable strategy. Again better students will bring out this aspect.

c) Most students will probably answer this with reference to the following diagram (after Mintzberg and Waters, "Of strategies, deliberate and emergent" - they were given this paper to study during a timetabled session in the module) :



Planned or intended strategy is the traditional view of strategy with the following characteristics
- Top down
- Developed consciously, then implemented
- Result of rational and analytical process
-Predicated on assumptions of predictable environments and control

Parts of the plan may be implemented (realised) and this constitutes deliberate strategy. Parts of the plan may not be realized – this is unrealized strategy.
Emergent strategy appears as a result of unplanned events and actions which show consistency and connect together over time into a strategic theme.

For a strategy to be perfectly deliberate—that is, for the realized strategy (pattern in actions) to form exactly as intended—at least three conditions would seem to have to be satisfied.

- First, there must have existed precise intentions in the organization, articulated in a relatively concrete level of detail, so that there can be no doubt about what was desired before any actions were taken.

- Secondly, because the realisation of a strategy requires collective action, the intentions must have been common to virtually all the actors: either shared as their own or else accepted from leaders, probably in response to some sort of controls.

- Thirdly, these collective intentions must have been realized exactly as intended, which means that no external force (market, technological, political, etc.) could have interfered with them. The environment, in other words, must have been cither perfectly predictable, totally benign, or else under the full control of the organization.

It is highly unlikely that such conditions could be met and hence it is highly unlikely that we find any perfectly deliberate strategies in organizations.

For a strategy to be perfectly emergent, there must be order—consistency in action over time—in the absence of intention about it. (No consistency means no strategy) It is highly unlikely that we can find consistent actions in the total absence of intention—hence we would expect the purely emergent strategy to be as rare as the purely deliberate one.

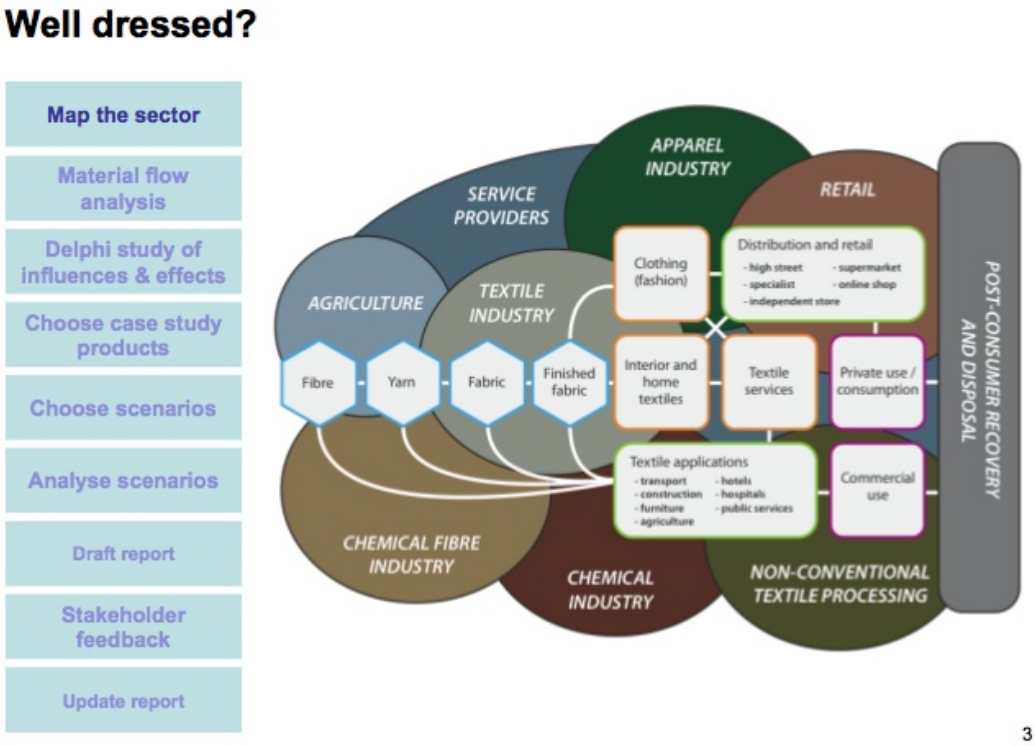
In practice strategies pure deliberate and pure emergent strategies form 2 ends of a continuum on which all strategies sit.

Answer quality comment: Not all students could define manufacturing strategy unambiguously, a key initial part of the question, and as a result lost marks, but most were able to discuss Mintzberg's strategy model effectively.

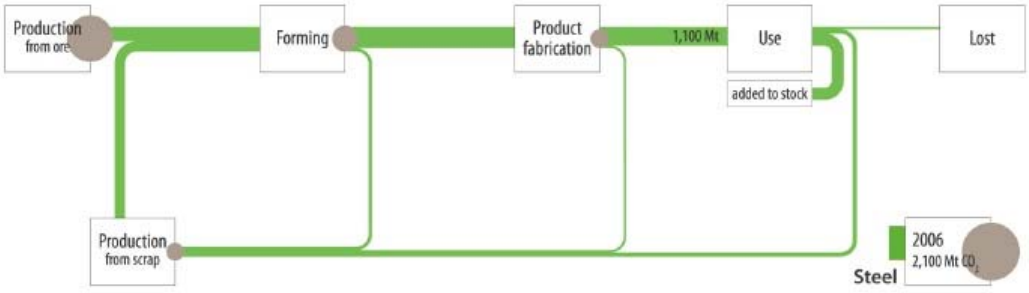
Question 2 Answer:

(a) Sustainable industrial practice requires a holistic approach rather than focusing on a single aspect . LCA, Systems thinking and Closed Loop processes all look at a product or process within a wider context, so allowing the environmental impact to be properly assessed. It is important for making substantial improvements to environmental sustainability because only by looking at the whole picture can sensible decisions be made. Tackling only one part of the picture (e.g. by lightweighting a product, so saving material) may have severe environmental consequences elsewhere (e.g. by making the product unrecyclable).
Systems thinking is a general term used to mean this type of approach. LCA is a quantitative example of systems thinking.
LCA: Evaluates impacts of relevant inputs and outputs of a product system. (energy, resources, waste). Defining the system boundary is a challenge (there are guidelines but scope for variability in interpretation). Generates hard data but time-consuming.
LCA 'light' is a concept which has been introduced elsewhere in the course: a cut-down version which divides the product lifecycle into four areas (material production, product manufacture, use, disposal) and looks only at energy consumption in each.
Closed loop processes aim to recycle or re-use all the material in a product to make new product of the same type so that nothing is downcycled to lower-grade applications (or lost to e.g. landfill). 100% closed loop is very hard to achieve, but the potential gain is in saving all the resources required to produce new material (often a major part of the footprint of a product).

(b) (i) Clothing and textiles.
Aim: to identify the type of change required to make a big difference to the impact of the sector.



Approach: Map sector, looking at energy requirements at all stages (see picture).
Identify stages which have the biggest impact.
Perform energy analysis for different product scenarios.
This is systems thinking, which includes quantitative elements without using full LCA.
The strength of the approach is that a wide range of measures (relating to all stages of the product lifecycle) could be identified, and their impact quantified.
(ii) Iron and steel.
Aim: To reduce carbon emissions by 50% by 2050, despite doubling production.
Analysis of steel lifecycle loop using Sankey diagrams to track energy (e.g. below).



The only way to attain the goal is to increase recycling dramatically, but also to reduce recycling energy by increasing the amount of steel re-use (e.g. re-use RSJs for structural applications). This is systems thinking used to inform lifecycle analysis, and with the goal of a complete closed-loop system for steel.
(iii) Paper.
Traditional paper recycling involves substantial input of resources (particularly energy, water). To improve the environmental performance of the paper industry, more economical ways of recycling are needed. 'Short-circuit' recycling processes can help here: instead of completely re-making the material, it is in some sense 'mended' so that it can be re-used. The specific example here is removing toner from photocopied paper in a low-energy process so that the paper can be re-used.
This is an example of intelligent attention to where economies can be made in the compete lifecycle of a product, so involves systems thinking and LCA light.
Other examples of similar processes in the polymer recycling industry have been discussed in lectures.

Answer quality comment: The answers to part (a) were rather imprecise, losing marks. However some good examples were given in part (b), indicating that the principles were generally well understood.

Question 3 Answer:

(a) (i)

The fuzzy front end of innovation is the period of uncertainty about product/project definition at the start of the innovation process. During this period an idea is being selected and developed, before significant resource is devoted to product development. According to Reinertsen, it is the period between when the project could have started,

and when it actually started. It has also been defined as the time between when a project starts and when the specification and design concept are fixed.

(a)(ii)

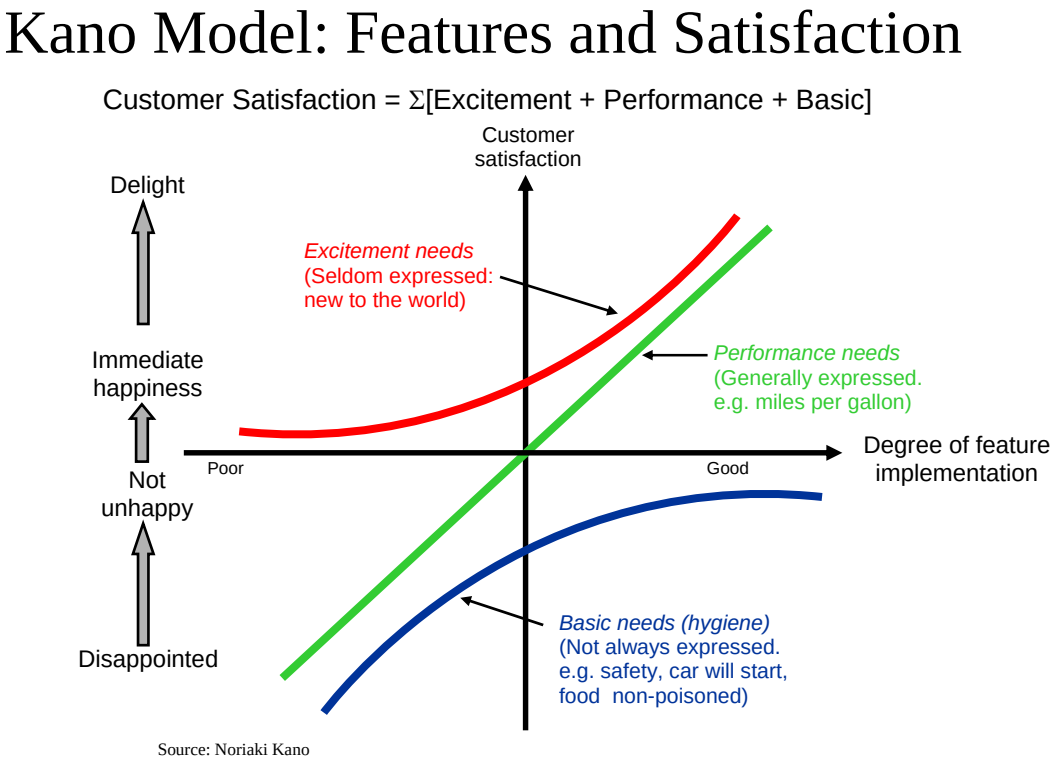
Incremental innovation (in a company context) is an innovation that relates to existing technology and existing markets that the company uses or is operating in.

(a)(iii)

Radical innovation (in a company context) relates to an innovation that depends on technology new to the company and markets new to the company.

(a)(iv)

The Kano model relates product features to customer satisfaction. It is used in the context of product development to identify the features that will have most impact on customer choice, and hence prioritise development effort. (see figure below).



(b)

The key change in approach as an idea progresses through the funnel is in terms of the structure and formality of the management of the process and the techniques deployed. At the fuzzy front end idea generation is required, with many possible options to be

generated before a preferred choice is selected. This requires an informal, open, creative atmosphere, in order to encourage people to contribute ideas and come up with new ones. Criticism and negative comment will slow the flow of ideas.

However as an idea is selected for further investigation and possible development into a product, greater control of the process is required, so that effort and resources are not wasted. In this context structure and procedure is more necessary, and phase review, or stage gate, processes are commonly used. (see figure 1 below)

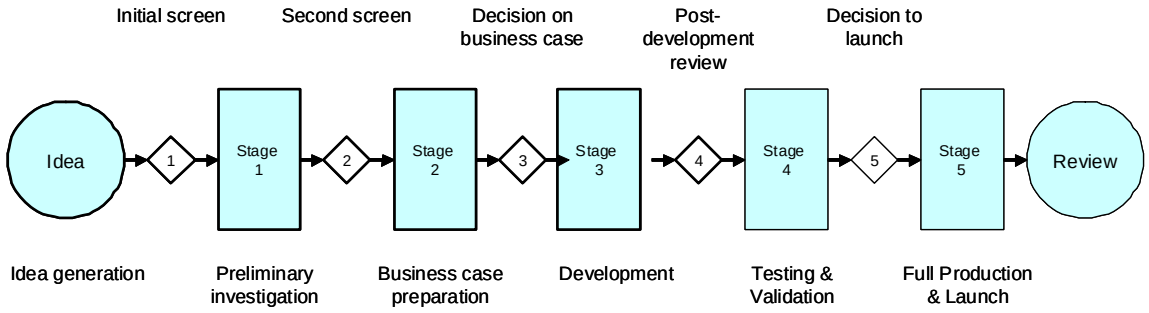


Figure1: Stage-Gate^{TM} process (source Robert Cooper)

The Innovation Pentathlon Framework by Goffin and Mitchell (figure 2) also covers similar ideas, and can be referred to while discussing these issues.

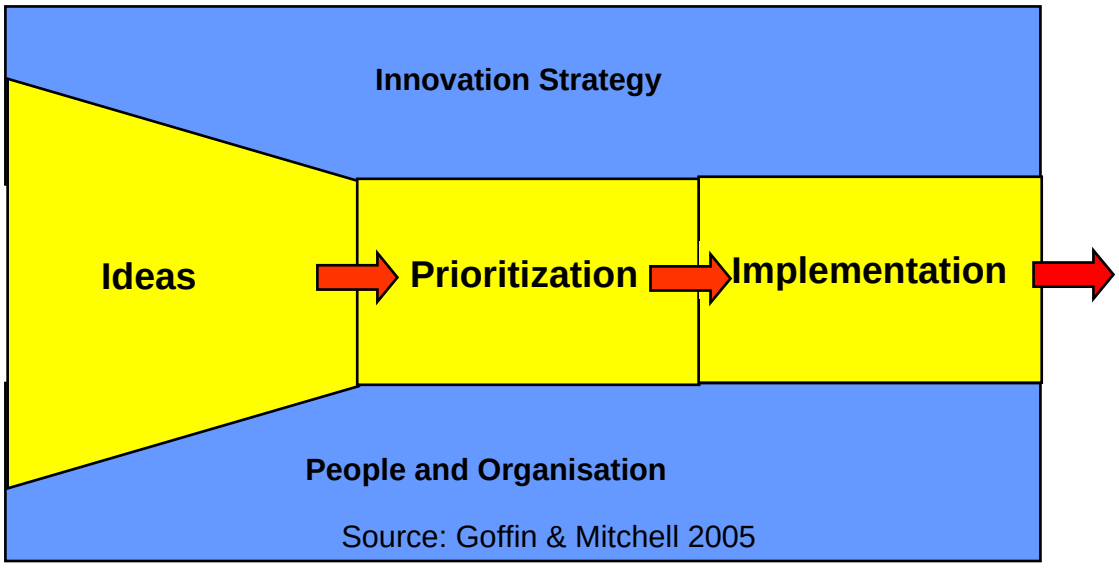


Figure 2: The Innovation Pentathlon Framework

(c)

Open innovation is the concept that the innovation process, and all activities through the funnel, may benefit from interaction with parties external to the firm. In practice this means seeking ideas from outside organisations and people, and exchanging IP with third parties.

While attractive in principle, the reality is difficult for many firms. Individuals who have been trained to maintain secrecy of ideas may find an open way of working hard to accommodate. A distinct cultural shift may be required, and new practices, to manage IP risks.

Answer quality comment: This question was attempted by all candidates and apart from three weak answers, all were able to address the issues raised effectively. There were no really excellent answers and some candidates used less appropriate analytical models (eg the ISAEP process model) when discussing the innovation funnel.

Question 4 Answer:

This question requires students to integrate material drawn from the sessions on "Management of Innovation", "Entrepreneurial Innovation", "Company Start ups" and "Company Growth Models". Although this represents a wide range of material, it is closely related and the lectures and workshops will have allowed students to familiarise themselves with it. The nature of the question requires a good appreciation of the material rather than in-depth knowledge.

Although the question provides scope for a variety of approaches, entrepreneurial innovation is likely to be an integrating theme, with students first discussing how this might be more readily achieved in the young firm, before going on to explain the ways in which a more entrepreneurial approach might be embraced in established firms, recognising the constraints that exist with respect to, for example, the scale and complexity of the organisation, established competences and capabilities, reputation, and the need for control systems and accountability.

In part a) students should make reference to the early evolution of the firm from start up (dealt with in the sessions on "Company Growth Models" and "Company Start ups"), describing how the nature of the organisation (such as its relatively small scale, lack of legacy, and light bureaucracy), its culture and operating environment facilitate or encourage innovation. The nature of innovation should draw on material dealt with in the session on "Entrepreneurial Innovation".

Very good papers will deal in a coherent way with nature, culture and environment, explaining how these features support innovation, illustrating and substantiating the points with specific examples from case studies or personal experience. They may challenge the assumption embedded in the introduction, supporting their argument with empirical material. Good papers will describe the nature and culture of the young firm and explain how certain features might facilitate innovation. Examples should, again, be specific, drawing on course material or personal experience. Weak

papers will present features of young firms without making specific associations with innovation and possibly using vague examples.

In part b) reference should be made to innovation management practices, and entrepreneurial innovation and answers should discuss how established organisations differ from younger ones and how those differences might influence innovation (drawing on material from the sessions on "Company Growth Models" and "Company Start ups" and “Organising for Innovation”). The last part of the question is intended to elicit a discussion of the tension between maintaining a wide ranging opportunity-based approach, and the effective operation of a large, complex organisation. Students may draw on material from the “Organising for Innovation” session which covered the problems of adopting appropriate models in different parts of the business and at different stages of the innovation process.

Very good papers will place most emphasis on the latter part of the question, discussing the problems of maintaining and promoting entrepreneurial innovation in the established firm, with empirical examples and outlining specific measures that might be adopted. These papers might also explore the extent to which innovation management practices are designed to encourage an entrepreneurial approach. Attitudes to risk may be argued to be different in larger established businesses, and the influence of shareholders more restraining. Again, very good papers might challenge the assumptions implicit in the question, using empirical evidence to make the case. Good papers will describe the chief differences between small young firms and more established organisations and will explain, with specific examples, how an entrepreneurial approach might be encouraged. Weak papers will emphasise description and are likely to use vague examples.

Answer quality comment: This question was competently addressed by all candidates that attempted it, with the exception of one comparatively weak answer and one very good answer. Overall students could discuss the issues raised by the question, and in most cases give relevant examples. Discrimination was mainly possible on the basis of the fullness of explanation given, and the richness of the illustrative examples quoted.

Question 5 Answer:

This question requires students to integrate material drawn from various parts of the course. The question requires a thorough understanding of the material on Mergers and Acquisitions, along with familiarity with the material dealt with in the sessions on "Partnerships and People", "Management of Change" and other parts of the course. The course covered acquisitions mainly concerning large organisations acquiring smaller ones, and this is likely to be reflected in the answers, though the question is not limited to this type of scenario.

In part a) students would be expected to refer to acquisition as a source of, for example, funding and other resources, expertise and technology, and access to new markets or sectors, and as a means of, for example, encouraging innovation, eliminating a competitor, or increasing credibility. This question is essentially descriptive, but students should explain, briefly, why acquisition might be motivated by each factor cited.

Very good papers will identify a number of factors covering a good range of motivations (e.g. funding-related, technology-related, and strategy-related), with explanations and examples. Good papers will cover more than one type of factor, with explanations and, possibly, some examples, while weak papers will provide a list of factors without adequate explanation, and may not differentiate between acquirer and acquired.

In part b) papers should discuss the items identified in part a), explaining specifically how differences in particular cases might result in disappointment. Given the reference to "those involved" in the first part of the question, some reference should be made to the different expectations of the parties involved in acquisitions. For instance, those running an acquired firm seeking resources to allow them to develop their technology or products, might consider the process unsuccessful if the acquiring organisation's chief motivation was gaining access to an existing product or technology which complemented their existing products and, as a result, was not inclined to invest in the development of other parts of the newly-acquired business.

Very good papers will link the discussion with part a) and will provide examples (not all necessarily empirical) of situations that might arise. Again a good range of types of issues would be expected, and the answer could draw on material from several of the module lectures and workshops. Good answers will also refer to part a) and will explain how differences might influence the success of an acquisition, but they will address a smaller number of issues, or several closely related examples. Weak papers will not make clear the reasons why differences might affect the success of the acquisition and will provide few, or very vague, examples. Insight and explanation are the main criteria for evaluation.

Part c) draws on parts a) and b), but requires students to prioritise the various issues before suggesting means of addressing them. Issues expected here would include the mismatch of expectations, realism in expectations, particularly with respect to timescales for the acquisition process, clashes of culture, and the need to effectively manage change within both organisations. Measures to address these issues would include identifying appropriate acquisition partners, adequate attention to pre-acquisition dialogue and third-party mediation/facilitation.

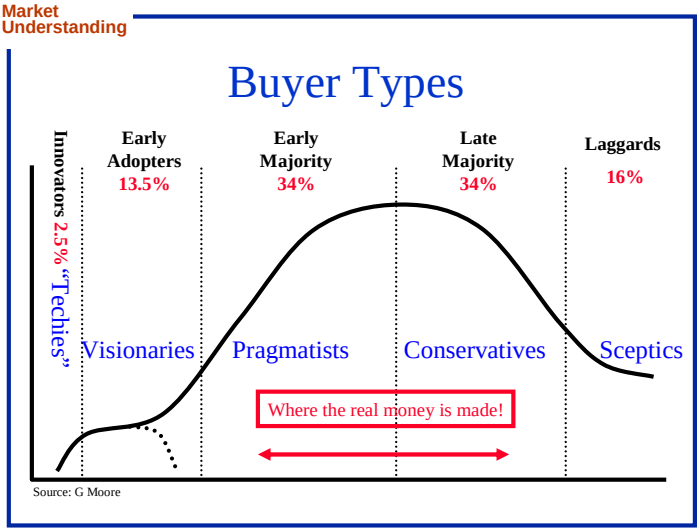
Very good papers will explain the rationale for their choice of issues, possibly with examples, and will provide an explanation of how measures might be effective, while acknowledging the difficulties involved and their limitations. Good papers will also explain the selection rationale, and will explain how measures might work, but probably for a narrower range of issues, and without the same level of recognition of the possible difficulties. Weak papers will not justify their selection and may not explain how measures might work. These papers are unlikely to provide well-integrated examples. Prioritisation, justification and explanation are the main criteria, with insight into the practical application being the chief distinguishing factor for very good answers.

Answer quality comment: A good set of answers, with variations introduced by clarity of argument and better essay skills amongst the better candidates. There was an unjustified assumption by many candidates that the acquired firm was typically an entrepreneurial start-up/small firm, founded by the management. This rather skewed the arguments presented and a more rounded treatment of the acquired firm's perspectives would have produced higher marks.

Question 6 Answer:

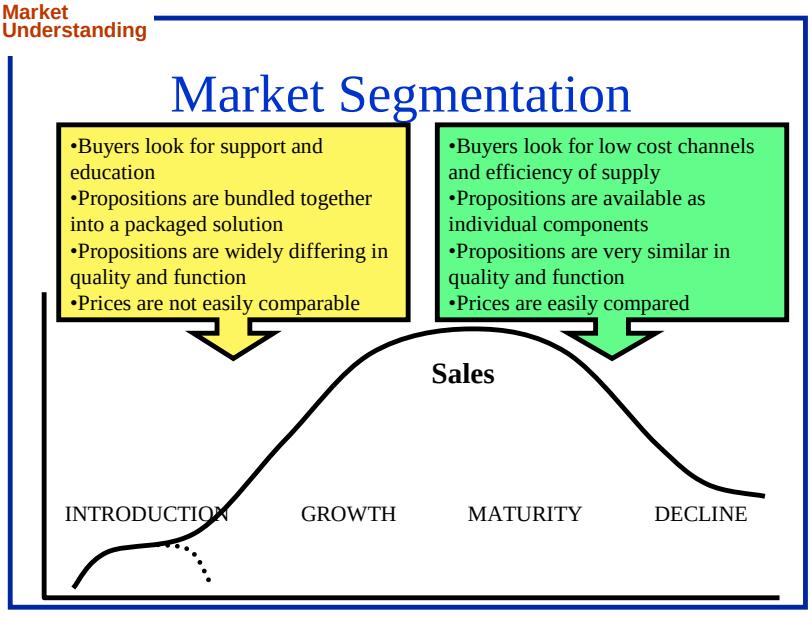
(a) **Briefly describe the different stages of the 'adoption life cycle' model (also known as the 'market life cycle' curve) and how this model helps a marketing manager understand different buyer needs.**

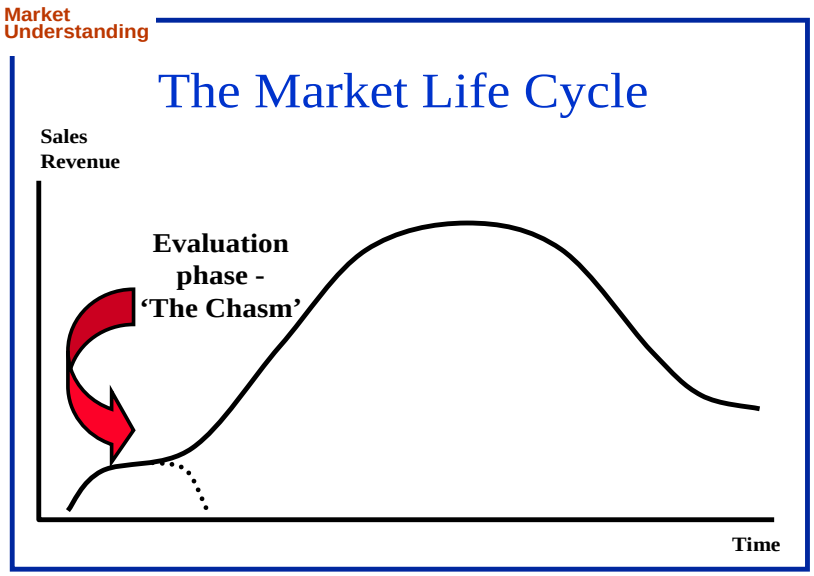
Market Understanding



- Innovators/Techies – will buy it because it's new
- Early Adopter/Visionaries – will but because it's a breakthrough to a dream
- Early Majority/Pragmatists – will buy it because it's an improvement and it fits with existing infrastructure
- Late Majority/Conservatives - will buy because it's the standard that everyone else has adopted
- Laggards/Sceptics - will buy because it's the only option

Market Understanding



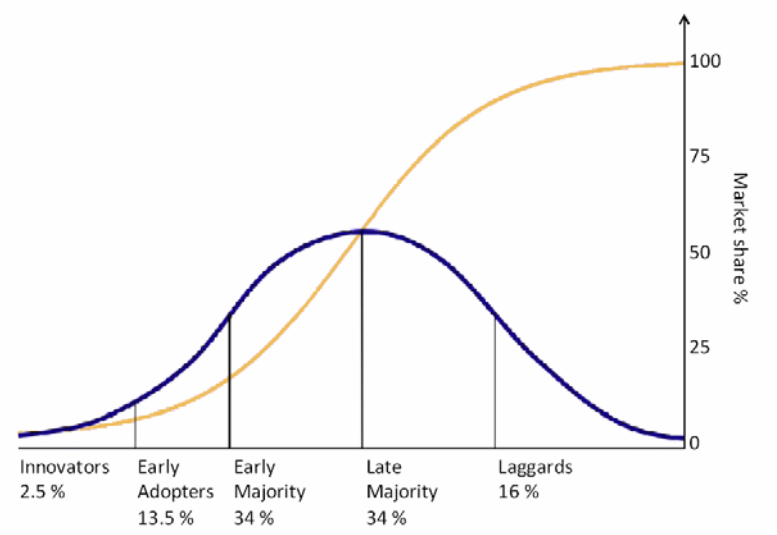


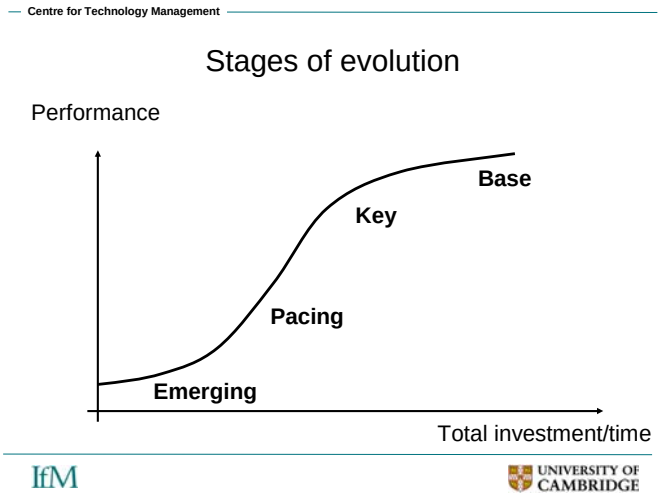
(b) What key marketing issues are typically faced by a high-tech company when launching new products?

The Key issue is "Crossing the Chasm" and getting onto the growth part of the curve – pragmatists adopting the new technology. Gaining the confidence of Pragmatists

- Technology has to work properly
- Must fulfil the need of a genuine viable market segment
- Must be accessible to the segment
- Awareness and Funding
- Understandable – able to see the benefits
- Low learning barriers
- Performance must exceed expectation – and not give problems
- Infrastructure needs to be available or imminent
- Compatible/Fit to existing systems
- Different marketing requirements between Innovators and Early Majority – move to mass market approach, more transactional marketing. Niche->Mass

(c) The cumulative 'adoption life cycle' curve and the 'technology evolution' curve are both 'S-curves'. Discuss what relationships may exist between these two curves.





- Although Adoption L-C and Technology L-C concepts are both S-curves and often appear close together there is not a direct relationship
- However, where products are still moving up the Technology curve this will affect the confidence of the Market and slow down market acceptance eg electric car
- And products that have not reached Technology maturity are unlikely to reach Market maturity because the Late Majority/Laggards are less likely to buy

(d) From a marketing perspective, what are the key differences between launching a new technology in a new market and launching a mature technology into a new market?

New/New	**Mature/New**
Double uncertainty – higher risk No reference points Timescales very uncertain New technology is likely to be inferior or less efficient compared to existing products Market is likely to be initially small - less profitable - less attractive business evaluation High level strategic commitment Discussion about business risk Training/learning as you go Possible exit strategy if it all goes wrong	Using a mature technology platform Lots of reference points to help Possible shorter L_C Possibility of extending L_C of products by export from original market Danger of technology being too advanced for the market place Possible issues of infrastructure development Still need for local adaptation of project – cannot assume good in 1st market automatically applies to new market (eg Baylis wind-up radio, American fridges in the UK) Technology may be skipped – or not applicable IPR issues?

Answer quality comment: Good students who knew the subject matter and read the question carefully were able to give good answers. The average student response tended to discuss general marketing topics without sufficient reference to the key points being addressed by each part of the question. There were two very weak answers. One had incorrectly understood the key concepts underpinning the question, and the other was incomplete, perhaps due to lack of time.