

MET 2 Paper 2 Crib for 2010-2011

Question 1

1 What advice would you give to a manager tasked with implementing a major organisational change programme? Your answer should address the nature of change, the process of implementing change, and common obstacles to change, along with suggestions to overcome them.

Answers to this question should be based primarily on material from the lecture “Leadership and Change”, supplemented by insights from the presentation by Chris Owen of Caterpillar, which described 2 change programmes with which he had been involved, and the case study used as part of the module assessment which described Jeff Immelt’s leadership of GE.

Readings were provided on CamTools and included the following:

Burnes (2004) and Schein (1996) which argue for the continuing relevance of Lewin’s Planned approach to change, including, but extending beyond the three step model.

Garvin et al (2005) which emphasises the importance of persuasion in successful change programmes

Senge (1990) the well-known “Leader’s New Work” paper which describes the principles of “Learning Organisations”

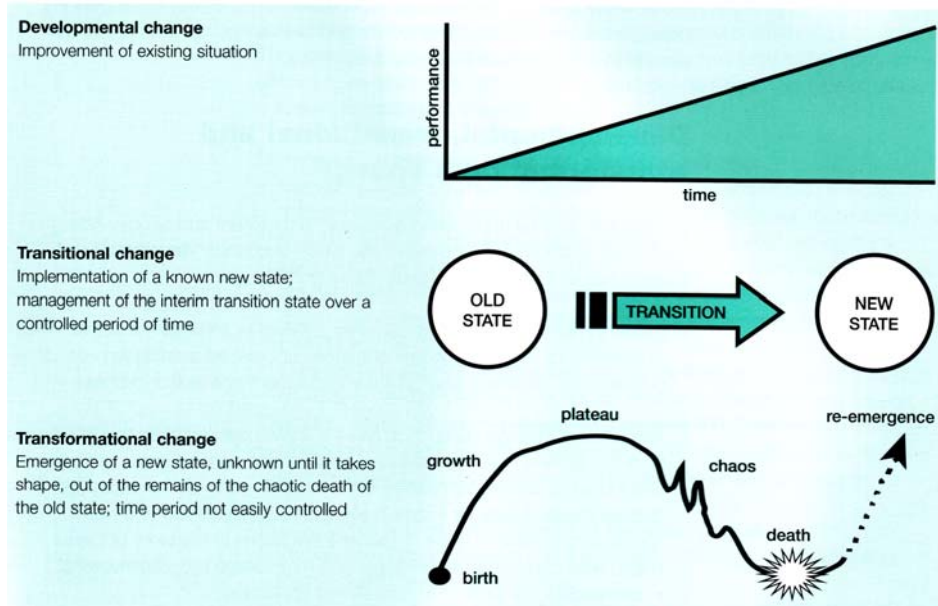
Two short pieces by Kotter (2005) on leadership and change.

In summary, students are expected to point out that the manager should consider the type of change, which will influence the approach to the programme; the need to work through a clear process, including establishing the need for change and communicating it to those affected by the programme; the sources of resistance to change, and means of motivating people to accept it, which should include the role of leadership, and, possibly, the development of a “learning organisation”, willing to embrace change.

Types of Change

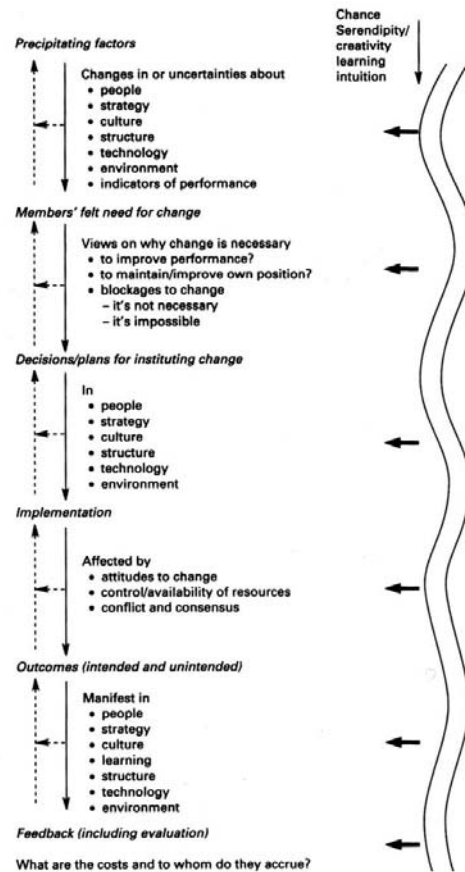
- Planned – deliberate, a product of conscious reasoning and action
- Emergent – unfolding; apparently spontaneous and unplanned
 - Multiple individual decisions, possibly based on implicit assumptions
 - External factors
- Episodic – infrequent, discontinuous and intentional
 - Often radical, or “second order”
- Continuous – ongoing, evolving and cumulative
 - Usually incremental, or “first order”

Whilst a formal change programme is clearly planned, and is likely to be episodic, students should recognise that emergent elements will be present as the programme is implemented, and could lead to unanticipated outcomes. They should also note that for a long duration programme, continuous, and emergent change processes could change the “status quo” in unexpected, and possibly unhelpful ways.



The intended outcome of change is also an important factor in designing a change programme. Developmental, or incremental change would be associated with continuous improvement programmes, building on and improving existing practices. Transitional change would involve the introduction of new practices, which are well understood, having emerged, for example, from a benchmarking exercise. Transformational change involves taking a completely new approach to the organisation’s activities, or some part of them, the outcome of which is not fully understood (GEC to Marconi, for example).

Change Processes in Organisations



Source: Dawson, 1996, Fig 10.1

It is important to consider the change programme in the context of the business. Sandra Dawson's framework starts with the factors precipitating change and proceeds all the way to outcomes and learning from the process. Important features include understanding people's views or interpretations of proposed changes (and "what is in it for them"), a planning process which considers all relevant factors, constraints on implementation arising from attitudes to change, resource availability and conflict, and the consideration of both intended and unintended outcomes across the system, along with the influence of extraneous factors such as chance and serendipity. [Students are not expected to be able to draw the diagram, but they ought to be able to provide a description similar to this].

This is to some extent an elaboration on Lewin's 3-step process. Lewin, placed a great deal of emphasis on the need to create a strong sense of the need for change among those affected (unfreezing), through good communication, both of the vision, and the benefits to be derived by individuals and groups (rather than the organisation as a whole). This communication can only take place if those leading the programme have established the benefits and requirements for the business as a whole. Lewin also emphasised the need to reconfigure systems to reinforce new practices beyond the life of the change programme itself (refreezing) and pointed out that once the business need for change has been established, and the objectives defined, it is important to communicate both to those affected by the change in order to gain their commitment. [Students are expected to be able to describe Lewin's model, remembering "step 0" (identifying the need for change)]. Burnes (2004) points out that the three step model is only one part of Lewin's theory, and argues that understanding context

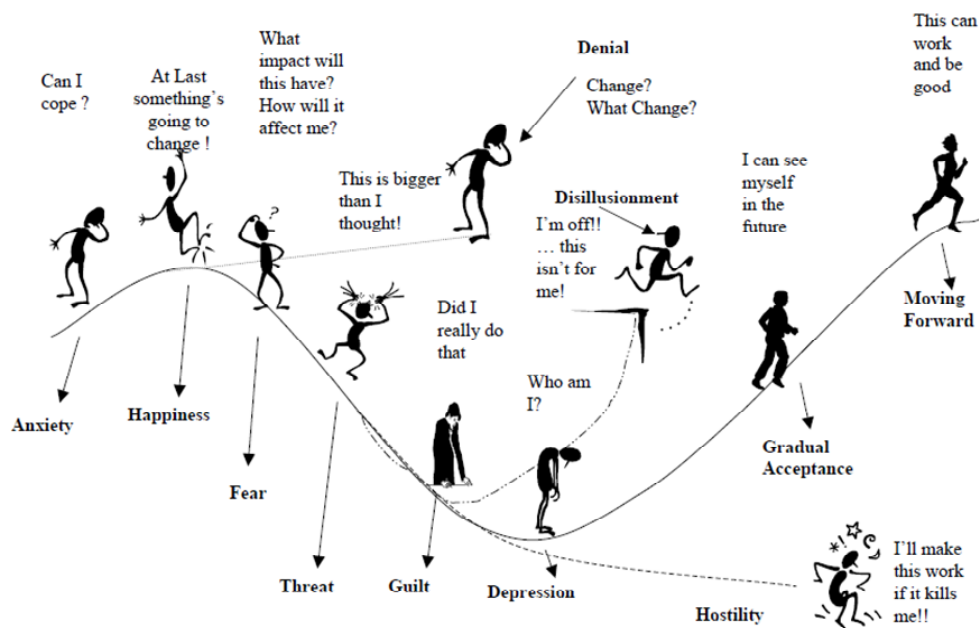
(Field theory), group effects (Group Dynamics), and the particular behaviour patterns of the individual organisation (Action Research) are essential in applying the model. The extent to which groups can be considered homogeneous is, however, open to question.

Lewin's Three Step Model

0. (Identify need for change)
1. **Unfreezing** – sense of urgency; communicate vision
2. **Moving** – model changes; build confidence
3. **Refreezing** - Adjust systems to reinforce changes

- Field Theory
 - understanding group behaviour by mapping field in which it occurs
- Group Dynamics
 - the group's shaping of individual behaviour
- Action Research
 - "...cannot understand an organisation without trying to change it..."

The Process of Transition



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John Fisher's depiction of the process of transition was intended to provide some light relief, but it is based on George Kelly's Personal Construct Theory, and suggests that people's perception of change evolves as the process proceeds. He argues that those leading change should work to manage expectations and perceptions.

Why Managers Fail to Deliver Change

Ineffective communication skills/practices	80%
Poor working relationships and interpersonal skills	79%
Person-job mismatch/skills gap	69%
Failing to set clear direction/clarify expectations	61%
Delegation and empowerment breakdowns	56%
Failing to break old habits and adapt	54%
Inability to develop cooperation/teamwork	51%
Lack of personal integrity and trustworthiness	49%
Inability to lead/motivate others	45%
Poor planning practices/reactionary behaviour	44%

Longenecker et al based their analysis of causes of failure on interviews and focus groups involving over 1000 managers from more than 100 manufacturing and service organisations. An important observation is that the top two reasons concern communication and interpersonal relationships, which could be quite highly correlated. The third item refers to actual ability or competence, but item four is, again, related to communication and management of perceptions or expectations. The significance of all items will, of course, vary with particular circumstances. [Students should be able to describe the top 4-5 items, and explain why they might be important]

Resistance to Change

- Will depend upon the individual's interpretation of the change and its impact upon them, influenced by e.g:
 - Its effect on the intrinsic nature of the work
 - Its effect on the amount and direction of discretion, power and autonomy
 - The organisational context (trust of managers/firm)
 - The manner in which it is introduced
 - The perceived balance of cost and benefits
 - Underlying tension (long standing disputes aired as part of change process)

Dawson's list of causes of resistance to change emphasises the personal nature of responses to change. It provides a useful list of important factors to be considered, but it points out that it is people's interpretation of the ways in which the change will affect them that is most

important. [students should be able to summarise the factors (i.e. effect on work itself - benefits and costs - empowerment, trust in the organisation and possibly the risk of unrelated factors influencing the process, but they should acknowledge the importance of individual perception and interpretation]

Dealing with Resistance to Change

- **Education and Communication**
 - When there is a lack of information & analysis
- **Participation and Involvement**
 - Where do not have all nec. info & others have power to resist
- **Facilitation and Support**
 - Where resistance largely reflects problems of adjustment
- **Negotiation and Agreement**
 - Where one or more powerful parties will lose from the change
- **Manipulation and Co-option**
 - Where other factors will not work or are too expensive
- **Explicit and implicit coercion**
 - Where speed is essential and initiators have considerable power

Kotter and Schlesinger suggest a range of responses to resistance, ranging from the development of competences, and employee participation, to direct coercion. All of the approaches are said to be applicable in certain situations, determined by factors such as the scale or pace of change, the imperative for change, and the relative power of those leading the change and those affected by it. [The important point here is that there is a wide range of possible responses, each with benefits and drawbacks. Students are expected to quote examples and to explain the basic philosophy].

Kotter – “8 Steps to Successful Change”

- **Increase urgency** - inspire people to move, make objectives real and relevant.
- **Build the guiding team** - get the right people in place with the right emotional commitment, and the right mix of skills and levels.
- **Get the vision right** - get the team to establish a simple vision and strategy, focus on emotional and creative aspects necessary to drive service and efficiency.
- **Communicate for buy-in** - Involve as many people as possible, communicate the essentials, simply, and to appeal and respond to people's needs. De-clutter communications - make technology work for you rather than against.
- **Empower action** - Remove obstacles, enable constructive feedback and lots of support from leaders - reward and recognise progress and achievements.
- **Create short-term wins** - Set aims that are easy to achieve - in bite-size chunks. Manageable numbers of initiatives. Finish current stages before starting new ones.
- **Don't let up** - Foster and encourage determination and persistence - ongoing change - encourage ongoing progress reporting - highlight achieved and future milestones.
- **Make change stick** - Reinforce the value of successful change via recruitment, promotion, new change leaders. Weave change into culture.

Kotter's 8 steps summarise many of the earlier ideas, such as clarity and communication. For example, the need for urgency reflects Lewin's unfreezing process, as does the reference to emotional commitment. However, its focus is on what needs to be done to deliver a successful change programme. Vision, buy-in, empowerment, leadership, intermediate achievements and reinforcing change are all factors which can be associated with earlier issues. [students should be able to summarise Kotter's recommendations and to relate them to obstacles discussed earlier]

Although not explicitly discussed here, it is clear that motivation is an important factor in commitment to change. Motivation was dealt with in the leadership and change lecture, and may be discussed by some students. Theories of motivation (particularly goal-setting) explain some of the factors identified in the change literature referred to above. For example, clarity of purpose, and involvement in objective setting, and understanding the rationale for particular actions are all identified as influencing motivation. Leadership too, is implicit in the discussion.

Learning Organisations

“...a consummately adaptive enterprise”

- Beyond *adaptive* learning, to *generative* learning
 - expanding capabilities
- Depends on understanding the system
 - causes not symptoms
- The leaders task is to build an organisation in which people extend capabilities to “shape their future”

Some students may refer to Senge and “Learning Organisations”, because at their heart is the embracing of change, and the importance of the leader’s role in creating an environment conducive to, indeed promoting of, change. Elsewhere, there may be confusion about the distinction between managers and leaders. The stereotypes were presented in the lecture, but it was made clear that in reality the distinction is far less clear when considered in the context of day to day organisational activity.

Candidates displayed a wide range of ability with this question, from the very weak to the very strong. In general they were able to discuss the material from the lecture course. Some also made use of the additional reading, and others quoted from case examples. A common failing was insufficient reference to taught content, with the weaker answers giving almost no sign of having attended the course.

Question 2.

- (a) Swann plc has 20 million £0.50 ordinary shares and irredeemable loan capital with a nominal value of £40 million in issue. The ordinary shares have a current market value of £2.40 per share and the loan capital is quoted at £80 per £100 nominal value. The cost of ordinary shares is estimated at 11% and the cost of loan capital is calculated to be 8%. The rate of corporation tax is 25%. What is the weighted average cost of capital for the company? [8%]
- (b) Anderson plc has ordinary shares in issue with a par value of £0.50 and a price earnings ratio of 10 times. The dividend per share is £0.15 and the dividend cover ratio is 2.0 times. What is the dividend yield of a share in the company? (Ignore taxation). [8%]
- (c) Strauss plc has warrants in issue that can be used to subscribe for ordinary shares in the company on a one-for-one basis in six months' time at an exercise price of £4.50. The warrants are currently quoted at £1.20 and the current share price is £5.40. What are the warrant conversion premium and the intrinsic value of the warrant? [9%]
- (d) Trott Electronics plc has issued nominal share capital of £10 million, made up of £0.25 ordinary shares, and a market capitalisation of £20 million. The company expects post-tax profits for the forthcoming year to be £8 million and wishes to maintain a constant dividend payout ratio of 25%. Dividends are expected to increase by 3% per year for the foreseeable future. What is the expected rate of return from the ordinary shares? [8%]
- (e) Which one of the following statements concerning financing is correct?
- (i) Warrant holders receive a dividend on the warrants held.
 - (ii) A share repurchase will reduce distributable reserves.
 - (iii) Securitisation involves converting assets that provide a future stream of income into equity.
 - (iv) Preference share capital may be secured on the assets of the company. [8%]
- (f) Prior plc has ordinary shares in issue that pay a constant dividend per share of £0.25 and have a beta of 1.2. The current market rate of return is 8% and the risk-free rate of return is 2%. What is the predicted market value of each share of the company (to the nearest £0.01)? [8%]
- (g) Consider the following two statements:

- (i) One form of hedging is where an investor buys shares in one market and sells them immediately in another to profit from price differences between the two markets.
- (ii) One form of financial derivative is a preference share of a business.

Which one of the following combinations (true/false) relating to the above statements is correct?

	Statement (i)	Statement (ii)	
A	True	True	
B	True	False	
C	False	True	
D	False	False	[8%]

(h) An investor has a call option on 10,000 ordinary shares in Finn plc. The option premium was £0.40 per share and the strike price is £6.50 per share. At the expiry date of the option the share price was £6.80. Should the option be exercised and what is the net gain (loss) for the investor? [9%]

(i) Collingwood plc has a £50 million fixed-rate loan on which it pays interest at the rate of 7.8% per year. The company would like to undertake a swap agreement with a bank to exchange the fixed-rate commitment for a floating-rate commitment. A swap bank is prepared to pay a fixed-rate of interest of 7.5% per year and to receive LIBOR in return. LIBOR during the first year was 7.1%. What is the effective interest rate for the company for the first year of the swap agreement? [9%]

(j) The cost of equity capital for an ungeared company is 10%. A similar but geared company in the same risk class is financed by 60% equity and 40% loan capital. The rate of corporation tax is 20%. Using Modigliani and Miller (including taxation), what is the weighted average cost of capital of the geared company? [9%]

(k) Bresnan plc, which is financed entirely by equity, earns a constant return of 10% on its investments. The company has a constant dividend payout ratio of 40% and the earnings per share of the company is expected to be £0.50 at the end of the forthcoming year. What is the predicted market value of each share of the company? [8%]

(l) Consider the following statements concerning derivatives.

- (i) Futures contracts may not be traded on an organised exchange.
- (ii) Forward contracts may be traded on an organised exchange.

Which one of the following combinations (true/false) concerning the above statements is correct?

	Statement (i)	Statement (ii)	
A	True	True	
B	True	False	
C	False	True	
D	False	False	[8%]

Answer:

(a) The weighted average cost of capital is **9.0%**:

	Capital Market value £m	Weight %	Cost %	Weighted cost
Ordinary shares	48.0	0.60	11.0	6.6
Loan capital	32.0	0.40	2.4	
			<hr/>	9.0
			<hr/>	

(b) Earnings per share = Dividend per share x Dividend cover
 = £0.15 x 2.0
 = £0.30

Share price = P/E ratio x EPS
 = 10 x £0.30
 = £3.00

Dividend yield = (DPS/Share price) x 100%
 = (£0.15/£3.00) x 100%
 = **5.0%**

(c)

	£	
Cost of warrant		1.20
Exercise price	4.50	
	<hr/>	5.70
Current share price	5.40	
	<hr/>	0.30
Conversion premium		
Intrinsic value	= £5.40 – £4.50 = £0.90	

(d) $K_e = (D_1/P_0) + g$

$$= (2 \cdot 0 / 20 \cdot 0) + 0 \cdot 03$$

$$= 0 \cdot 13 \text{ or } \mathbf{13\%}$$

- (e) **Option B** is correct: a share repurchase involves a transfer from distributable reserves.
Warrant holders do not receive a dividend. Securitisation involves converting assets that will provide a future stream of income into bonds. Preference share capital cannot be secured on the assets of the company.
- (f) Using CAPM, the expected return for the ordinary shareholders is:
 $2\% + [1 \cdot 2 (8\% - 2\%)] = 9 \cdot 2\%$
 The predicted market value of a share is:
 $P_0 = D_1 / K_0$
 $= 25\text{p} / 0 \cdot 092 = \mathbf{272 \text{ pence}}$
- (g) The correct answer is Option D as both statements are incorrect. The investor described in Statement 1 is engaged in arbitrage transactions and not hedging. Preference shares are primary financial instruments and are not derivatives.
- (h) The option should be **exercised**. By exercising the option the holder will make a gain of $10,000(680\text{p} - 650\text{p}) = \pounds 3,000$. However, a premium of $\pounds 4,000$ ($10,000 \times 40\text{p}$) has been paid, resulting in a **net loss of $\pounds 1,000$** . Despite the net loss, the option should be exercised, otherwise the net loss would be $10,000 \times 40\text{p} = \pounds 4,000$.

(i)

	%
Pay loan interest	(7.8)
Receive fixed interest	7.5
Pay floating rate	(7.1)
	———
Effective rate	7.4 (i.e. LIBOR + 0.5%)
	———

(j)

$$\text{WACC} = 10\% \{ 1 - [(40 \times 0 \cdot 20) / (40 + 60)] \}$$

$$= \mathbf{9 \cdot 2\%}$$

- (k) The retention ratio is 60%.
 Thus, dividend growth = $60\% \times 10\% = 6\%$.
 The dividend payout for the forthcoming year is $40\% \times 50\text{p} = 20\text{p}$

$$\text{Predicted market value per share} = [d_1 / (k_e - g)]$$

$$= [20 / (0 \cdot 1 - 0 \cdot 06)]$$

$$= \mathbf{500\text{p}}$$

- (l) **Option D**
 Futures contracts are standardised and can be traded on a futures exchange, whereas forward contracts are tailored to the buyer's requirements and cannot be traded in this way.

By the nature of the question (many parts, short answers mainly requiring a mathematical calculation), any student who knew the course material well was in a position to achieve high marks. The students that answered this question were in general able to address all parts of the question and it produced a good range of marks.

Question 3.

a) Briefly describe 3 different product pricing strategies and give examples where these strategies would be appropriate.

Answer:

The terminology may vary and the list is not exhaustive:

- “Cost Plus” – May be used as a starting point to establish a selling price, in monopolistic situations, or historically for major contract works. There are also cost + margin contracts where the client insists on an open book contract
- “Demand Based”
 - Auction – sold to the highest bidder – classic supply & demand type situation. Lots of possible examples
 - Reverse Auction (also know as Dutch Auction) Alsmeer Flower Auction in Holland is probably the biggest example in the world
 - Might include sealed envelope bids
- “Product Line Pricing” – Used where there is a range of similar type product and the price range needs to look logical to the Buyer and does not bear any relationship to the underlying cost. Eg Range of wood screws
- “Marginal Pricing” – priced at the marginal cost. Either very aggressive entry strategy or early export strategy to gain a foothold in an overseas market. Can cause longer term problems maintaining profit margins
- “Competitive Pricing” – review similar products in the market place and either price point down to gain entry or add more feature to look better value.
- “Life-Time Pricing” – revenue/profit stream across whole life-cycle of the product. Eg Power-by-the hour, HP printers and cartridges, industrial carpet cleaners and consumables etc
- Also possible: “skimming”(starting with a high price then dropping), “penetration” (picking a low entry point to get established) and “value-based pricing” (what the customer is willing to pay).

b) In his book “Competitive Strategy” Michael Porter argues that companies should adopt one of two main strategies: “low cost” or “differentiation.” Compare the effect these two strategies have on a company’s Value Chain (R&D, Design, Supply Management, Production, Distribution/Routes to Market and After Sales Service).

Answer:

VC	Low Cost	Differentiation
R&D	Low R&D spend mainly aimed at efficiency improvement	Constant investment in new technology to stay ahead of the competition
Design	Ways to reduce cost	Ways to add value to the customer
Supply	Constant pressure on suppliers. Always looking for cheaper	Interested in better specification and higher quality (as perceived by

	alternatives	customer)
Production	Sweating the assets, Lean etc	Improvements that will increase customer satisfaction
Distribution	Lowest cost	Adds value to customer
After sales and service	Probably none	What ever is reasonable to support and retain the customer

c) Corporate Valuation needs to take account of the intangible assets of the business. What are the main intangible assets that allow companies to build strong brands? Illustrate your answer using a well known brand.

Answer:

It is estimated that in 2006 less than 10% of Microsoft's Market Capitalisation value was physical assets. Various terminology is used in the literature: brand is used in different ways, Human, Relational (or Customer) and Organisational (or Structural) components, and competences are often encountered.

(Tangible types of Resources:

- Financial – access to funds, gearing, cash flow, credit rating etc
- Physical – size, location, sophistication, flexibility of plant, equipment, buildings, raw materials etc)

Intangible resources:

- Human – skills, knowledge, decision-making systems and ability
- Technological – proprietary technology, technological know-how, IPR etc
- Reputation – (Brand) as perceived by the customer

Hoffman 2005 lists intangibles as:

- *staff skills,*
- *strategic and process quality,*
- *software,*
- *patents,*
- *brands,*
- *supplier and customer relationships,*

The brand identity prism (covered in lectures) can also be quoted to explain how its elements link to the intangible assets of a company.

Nearly all candidates were able to give a good account of 3 pricing strategies, but the second two parts of the question showed up the main differences in ability. A common failing in part (c) was merely to explain an element of taught content (the brand identity prism) without sufficient reference to the focus of the question – i.e. the intangible assets. Most students were able to give relevant illustrative examples.

Question 4

Discuss the different learning outcomes that can be gained from industrial project work, illustrating your answer with examples from your MET2 project experience.

[100%]

Answer:

There is a variety of ways to answer this question. There are many aspects of manufacturing industry that are explored during industrially based student projects, and many opportunities to practice analytical and team-working skills. Good answers address several issues:

1. The variety of sectors and company types/structures covered.
2. Manufacturing subject (domain) knowledge covered.
3. Analytical techniques experienced/practiced.
4. Data gathering/data reliability issues experienced.
5. Team-working/project planning/ issues experienced.
6. Solution generation.
7. Presentation and reporting skills practiced.

Individual answers vary depending on the particular experience of the student concerned. Examples that could be given under each heading are:

1. The variety of sectors and company types/structures covered.

Sectors as linked to the MET1 visits programme, and company types as in start-ups, SMEs, multi-divisional, multi-national, etc.

2. Manufacturing subject (domain) knowledge covered.

Plant layout and manufacturing methods, industrial engineering methods, maintenance and infrastructure practices, HR policies and methods, formal versus informal practices. It would be useful to illustrate this range of issues by means of the manufacturing business models covered during the MET2 induction week. Also a discussion of the area covered by manufacturing theory and the relevance in practice, for example a comparison between generic theoretical ideas and specific instances.

3. Analytical techniques experienced/practiced.

For example value stream mapping, pareto analysis and other contents of the lean tool box. Also the need to distil sometimes fuzzy objectives into concrete deliverables, i.e. redefining the problem.

4. Data gathering/data reliability issues experienced.

The difficulty of finding reliable data in a factory/business context (compared to previous experience of problem solving on the degree course). The need to triangulate data sources, and the ability to plan, arrange, manage, and debrief meetings with key people as part of the data gathering process.

5. Team-working/project planning/HR issues experienced.

The need to make the best use of team resources, dividing and coordinating the sub-tasks of the project. The importance of planning and review activities in making sure the projects delivers on time. Coping with psychological and personal difficulties that can arise in pressurised team work that has a deadline for results.

6. Solution generation.

Creating multiple solutions and a rationale for choosing the best overall solution. The ability to create a business/financial case for the proposed solution.

7. Presentation and reporting skills practiced.

Coordination of team efforts for reporting, the importance of professional presentation (visual and written) – clarity and succinctness.

Illustration from individual student project experience enhances the answer, as does some reflection on the individual's learning about themselves. The nature of problem solving by visiting people, students or consultants, may be a further learning outcome.

This question was well answered by most students, drawing very constructively on their individual project experiences during the course. However the better students provided structure in their answer and reflection on the learning process, while the weaker answers mainly concentrated on recounting their particular project activities. The project work had clearly been a valuable part of the course for the students answering this question.

Question 5

(a) Describe, illustrating your answer with examples, what is meant by the following two terms:

- (i) Market uncertainty;
- (ii) Technological uncertainty. [20%]

b) Explain how firms can use the process of Technology Roadmapping (TRM), and associated tools and techniques, to mitigate market and technological uncertainty when introducing new products or services to market. [30%]

(c) Discuss how the outputs from a TRM process could provide input for the 'Make versus Buy' (MvB) decision. [25%]

(d) The effective management of Intellectual Property Rights (IPR) has been identified as a critical factor in successful partnerships between firms. Discuss, using examples, some of the reasons why IPR management is challenging when forming and managing partnerships, and what strategies firms can use to overcome these challenges. [25%]

Answer:

(a)

(i) Market uncertainty: With a new product or service, it is extremely difficult to predict whether it will sell and in what quantities. Though there are many qualitative and quantitative approaches for helping firms understand potential customer demands, capturing information for a product or service that potential users have not seen or experienced typically results in very unreliable information. GE/Sony and the portable TV, and 3M and the Post-It are good examples of this.

(ii) Technological uncertainty: New technologies may not work as expected, be unreliable, and therefore add an additional area of uncertainty for the firm. Examples of technological uncertainty resulting in poor / non-existent market uptake are the Apple Newton (didn't work as well as customers expected) and Plastic Logic Que (complexities of novel production process resulted in inability to maintain consistent acceptable quality).

These issues underpins the fact that most innovations are based on small improvements to existing ideas (incremental innovations) rather than big leaps forward (radical innovations) (Booz, Allen, Hamilton report 1982). In addition, to lessen the impact of market and technological uncertainty, firms may choose to adopt a 'fast follower' rather than 'innovation leader' strategy.

(b)

TRMs are graphical tools whose development brings together various key stakeholders and perspectives to help build consensus around strategy. They provide a graphical representation

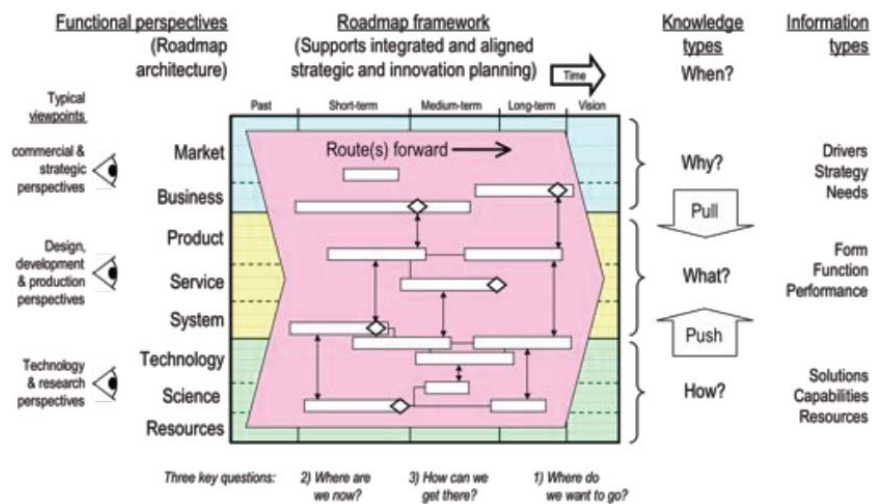
that combines a high strategic view of the topic of interest, comprising a multi-layered time-based chart, bringing together various perspectives into a single visual diagram.

They provide an on-going reference point for strategy implementation and development.

They have been defined by ex-Motorola CEO as: "...an extended look at the future of a chosen field of inquiry composed from the collective knowledge and imagination of the brightest drivers of change in that field". This definition emphasises the importance that knowledge and expertise plays in the process, the forward-looking nature of the approach, and its flexibility. (Phaal and Probert, 2009).

The core questions that TRMs help firms address are:

1. Where do we want to go? Where are we now? How can we get there?
2. Why do we need to act? What should we do? How should we do it? By when?



TRMs enable both 'demand' and 'supply' views to be represented, balancing 'market pull' and 'technology push'. Thus the TRM process results in a consensus view from a potentially wide range of stakeholders being built up which increases the chance of market and technological uncertainties being identified early in the innovation funnel and mechanisms being identified for addressing these uncertainties. As the innovation project develops, TRMs can be updated as new technological and market information becomes available, providing a 'live' integrated reference tool for all those involved in the project.

(c)

The TRM process should identify what resources are needed to develop what technologies to be integrated into what products to address what market opportunities. This provides managers with a clear view of what resources need to be allocated, developed or acquired. MvB is one of a range of tools whose use both supports the development of the TRM, and provides a means for targeting areas of further analysis (see figure below).

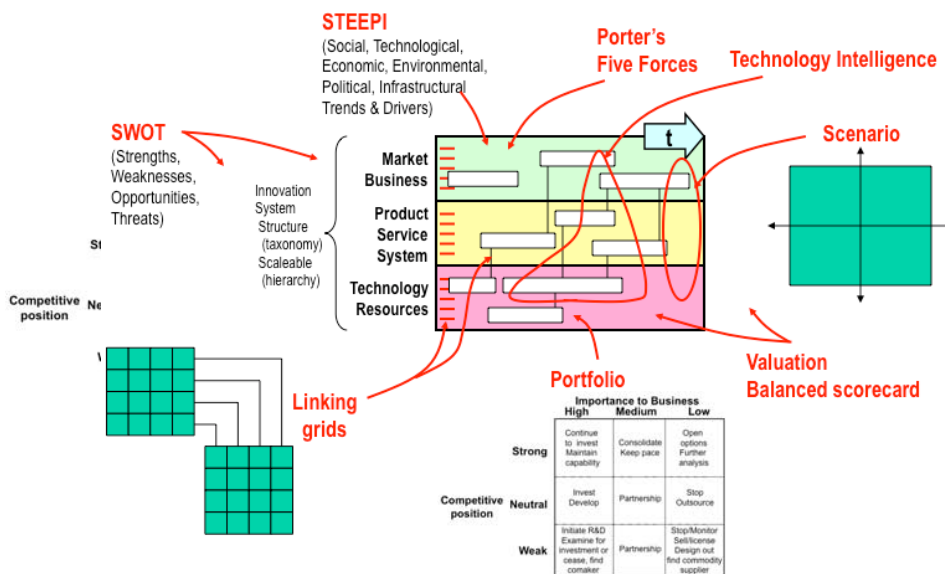
MvB provides a means for comparing the relative merits of particular technologies / resources in terms of their importance to the business compared to the firms relative competitiveness in the use or application of that technology. MvB assesses:

- How does a firm's performance with the technology compare? (measured via the key success factors)

- What scope does the technology have to influence the key success factors?

		Importance to Business		
		High	Medium	Low
Competitive position	Strong	Continue to invest Maintain capability	Consolidate Keep pace	Open options Further analysis
	Neutral	Invest Develop	Partnership	Stop Outsource
	Weak	Initiate R&D Examine for investment or cease, find comaker	Partnership	Stop/Monitor Sell/license Design out find commodity supplier

For firms with a large portfolio of technologies and products, MvB provides a means to focus limited resources onto those internal technologies that are most critical and which cannot be sourced from outside. It also provides a clear, traceable rationale for seeking other technologies from outside.



(d)

Key issues with IPR and partnering. These can be very clearly illustrated with examples of partnerships between start-ups and large firms as such partnerships amplify many of the common problems:

- Implications of partnering on IP ownership and usage. A partnership agreement based around one piece of IP may restrict further usage of that IP. Given the uncertainties associated with markets and technologies as described in the answer to part (a), firms may need the freedom to establish multiple partnerships. However, prior partnership agreements may restrict a firm's ability to do this. Strategy: Use an experienced commercial lawyer who understands the overall aim of partnering, spends time understanding the company's strategy, and doesn't just focus on the details of contracts.

- How to deal with arising IP? A partnership may initially be based around a specific piece of IP and agreements may be signed in relation to that, but what happens when new IP is generated as a result of the collaboration? One side may claim majority ownership as they believe that they have contributed more to its development. Strategy: Make sure that there is explicit agreement on this at the contracting stage, detailing use versus ownership, how costs of development will be allocated, etc.
- How to agree valuation / royalty rates? If the technology is very novel but believed (by one side) to have great potential value, agreement on value and royalty rates is likely to be very hard to reach. Strategy: Linking royalty payments to measureable cost-savings generated by the use of the IP.
- How to deal with the cost of managing IP? The costs of IP management can escalate rapidly. If one side of the partnership has limited resources, they may find that they lose control, or lose opportunities, due to an inability to meet the costs of filing, policing, and negotiating in global markets. The richer firm may use this imbalance to dominate the partnership. Strategy: Various techniques can be used such as the use of honesty payments (putting money into an account that will be used to cover legal costs if one partner defaults on the agreement).
- How much to disclose? And when? Use of non-disclosure agreements (NDAs) for non-patented IP may not be popular with large firms when starting negotiations with smaller firms. Strategy: Early in the negotiations, discussions should focus on 'what' the IP can do, not 'how'. Use of Memorandums of Understanding may be very useful in building mutual trust as to what could be done together.

The question contained many parts and students were able to answer all of these competently - they had clearly had learned and understood the content of the course.

Question 6

Successful new businesses are frequently faced with the challenge of rapid scale-up of manufacturing.

- (a) What potential problems would you envisage in the structure, operations and supply chain of a rapidly growing manufacturing business? [50%]
- (b) What steps might you take to mitigate these problems? [50%]

Illustrate your answer with examples.

Answer:

This question is designed to explore students' understanding of the issues associated with the rapid growth of new manufacturing-related businesses. Part 1 seeks an exposition of the key factors that need to be recognised and managed during the periods of rapid growth. Part 2 seeks students' awareness of potential mitigating strategies or processes which might be employed to address barriers to growth identified in Part 1. Answers are likely to include the following:

Part 1

1. Acquisition of premises
2. Acquisition of plant and equipment
3. Establishment of supply network
4. Recruitment of staff
5. Commissioning and ramp up
6. Quality assurance
7. Timely delivery
8. Responsiveness to demand variation
9. Procedures for coping with customer dissatisfaction.

In addition to these factors, there are some broader issues that arise as a result of rapid growth, that could have an impact on the structure, operations and supply chain of the business. These include the increasing complexity of the business, leading to organisational and cultural change. Decision making will involve more people, and may be slower. There may be a need to recruit new people to fit the new business culture and introduce more formal systems. Larger volumes may require new equipment, and access to resources may become a challenge. Outsourcing of some activities may be necessary.

Part 2

Mitigating steps which might be adopted to overcome potential barriers to growth:

1. Early involvement with SME networks and where affordable agencies to identify suitable premises. Also explore vacant space in existing industrial businesses.

2. Early engagement with hire and leasing companies but also exploration of “second-hand” options from existing businesses or receivers.
3. Early identification of potential suppliers thorough review of their capability and reliability.
4. Use of agencies to identify and acquire staff initially on temporary contracts.
5. Systematic review of commissioning and ramp up rates using “real data” from similar installations.
6. Early establishment of quality standards and procedures.
7. Rigorous controls and flexible working practices to ensure timely deliveries.
8. Early warning systems for variations in demand in order to manage procurement and resourcing.
9. Clear and rapid processes for responding to customer dissatisfaction through remedial action and process improvement.

The introduction of more systematic approaches to decision making may help, for example ‘make or buy’ decision support when considering outsourcing. Rapid growth can also lead to cash-flow problems, so it may be wise to ensure finance is available in good time to support the growth.

In constructing answers, students drew from many parts of the curriculum, with most making use of taught content concerning the growth of the firm.