2018 MET IIB Paper 2 Question 1 – Post-exam Crib

(a) For a large manufacturing firm, describe how *technology roadmapping* and *technology intelligence* techniques could be used to help the firm respond to the emergence of a new production technology.

[50%]

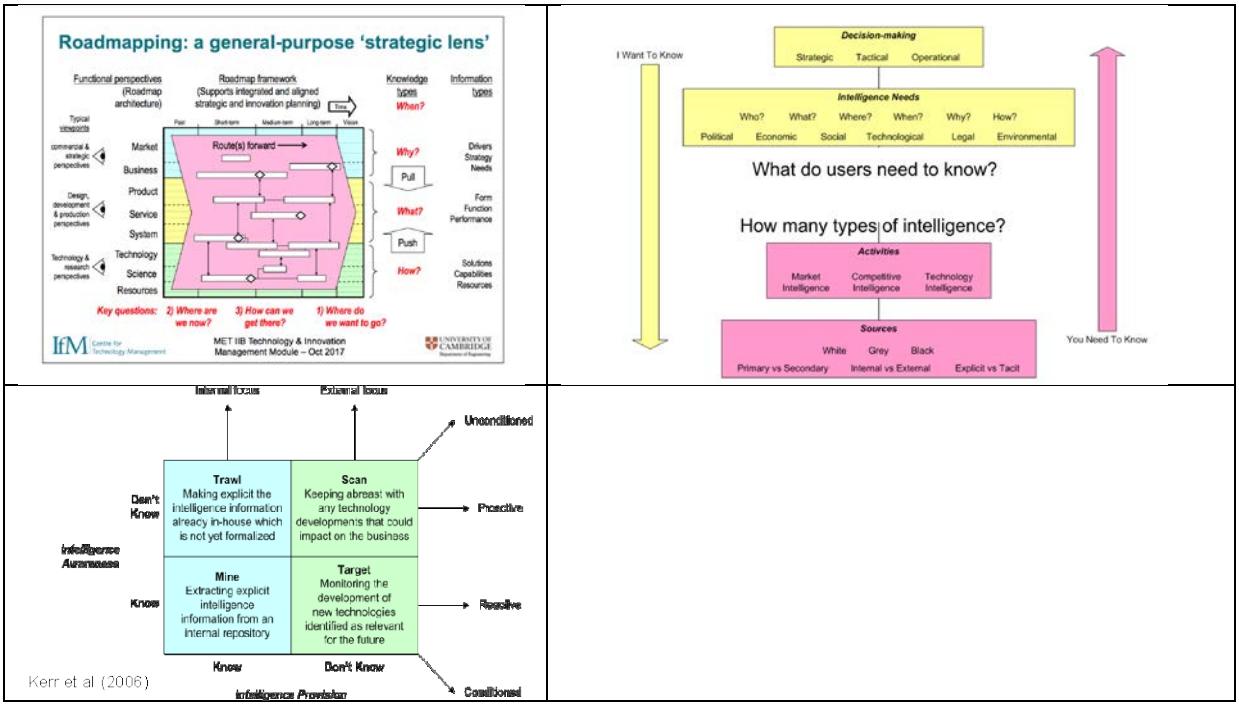
(b) Discuss, illustrating your answer with examples, how governments can support manufacturing firms of all sizes in responding to the emergence of a new production technology.

[50%]

Crib:

(a)

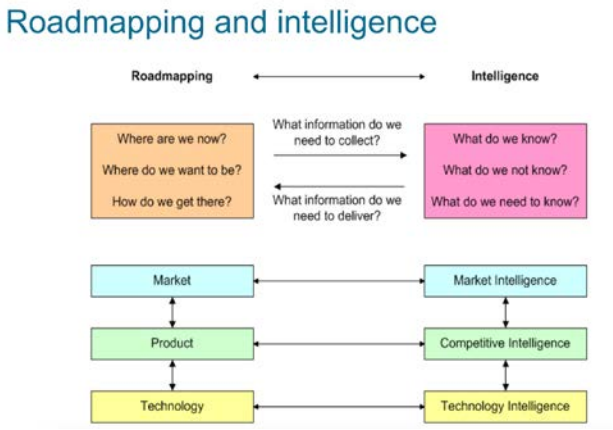
Basic answer should describe TRM & TI purposes & processes drawn from figures below:

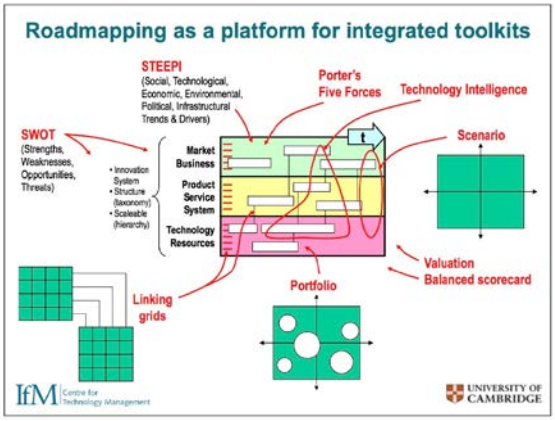


Stronger answers should highlight (i) the interplay between these activities, (ii) the role of size and age of firm in approach taken (could imply path dependency / need to generate return from existing assets, but also resources available to undertake these processes etc).

Stronger answers would also be expected to mention and describe the concept of technology foresight, for instance, as the purpose or reason for firms to conduct technology intelligence. Such answers may also refer to the notion of disruption in this context, for instance, discussing that firms need to identify potential disruptive technologies early and thus identify weak signals to avoid being under threat of missing such technologies and

continuing only on established trajectories. The figures below could be used to explain the interplay between TI and TRM.





Post-exam comments:

All students could describe TI and TRM processes to an appropriate level of detail. Relatively few managed to discuss the linkages between these in much depth. Many students discussed technology in general, rather that the specifics of a new production technology. Some students drew diagrams without explaining what these meant in the context of addressing the question. Best answers were able to explain the interplay of the use of TI and TRM, highlighting the specifics of the context (i.e. large company, production technology)

(b)

Basic answer should provide an overview of the role of government in terms of technology, innovation and industrial policies, and what each means and how linked. The basic answer should also describe the issues that may arise as a result of this being a production technology (i.e. need for development and diffusion of enabling technologies) and that there will be a huge range of different needs for technology intensive compared with technology contingent firms.

Stronger answers would
(i) describe the context for emerging production technologies in more detail (e.g. Tassey)
(ii) draw out issues relating to firms of different sizes (i.e. support for start-ups c.f. SMEs c.f. MNCs)
(iii) identify different types of support required at different stages of the emergence/maturity of the technology
(iv) highlight that different government support mechanisms might need to be used in combination/synchronisation to ensure effective impact/competitiveness.
(v) make reference to different approaches that have been deployed in different countries.

Post-exam comments:

Most students could discuss the range of approaches that governments could take to support this issue. However, not all students discussed the specific issues that relate to the

fact that this is a production technology, hence issues of skills, supply chain development, complementary technologies, etc needed to be linked to a broader discussion of science, technology, innovation and industrial policies and instruments. The question also explicitly referred to 'firms of all sizes' so reference needed to be made to any size-specific issues (e.g. smaller firms do not have resource/time to engage with complex programmes).

2018 MET IIB Paper 2 Question 5 – Post-exam Crib

You are the Chief Operation Officer in a large multinational manufacturing firm of construction and mining equipment. The firm's strategy focuses on delivering industry-leading products and services to customers, and achieving profitable growth for the shareholders.

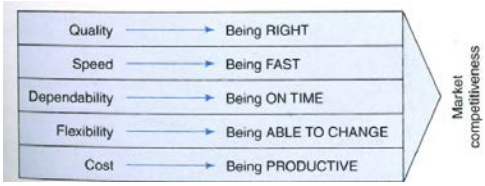
(a) Describe how the *five operations performance objectives* could be structured for your firm's operations. [30%]

(b) Describe an example of a digital-enabled solution that could expand your firm's offerings and increase customer loyalty. [30%]

(c) Your firm realises that it is losing revenues from the sale of parts and servicing to independent garages often using replacement parts from third-party suppliers. Discuss how you can use the phases of *service design thinking* to introduce a service to solve this problem. [40%]

Crib:

a) **Basic answer should describe** the five common operation performance metrics presented below, and be able to expand upon each one of these as shown in the example for 'quality' below:

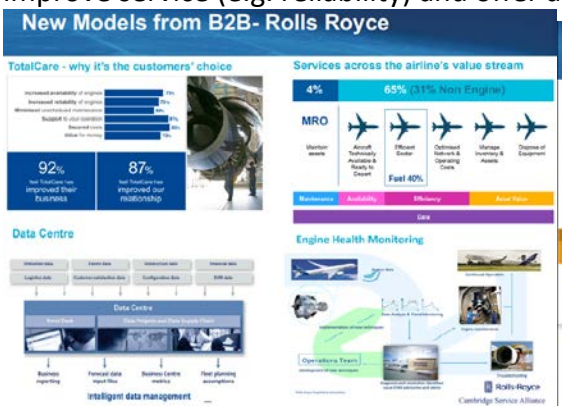


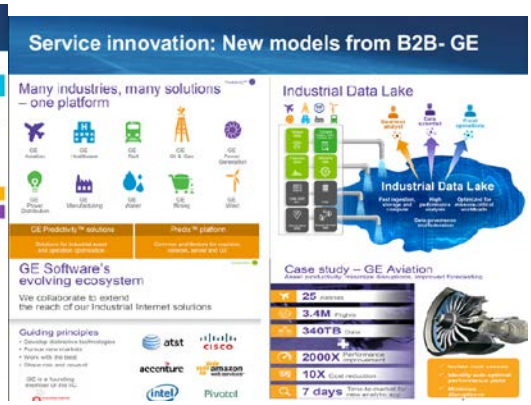
Dimensions	Description
Conformance	Reference to conformance to specification
Performance	How well the product performs its primary function
Features	What additional features the product contain
Reliability	How well the product continues to perform
Technical Durability	How long the product lasts before becoming technical obsolete
Serviceability	How easy the product is to service
Aesthetics	The look and feel of the product
Perceived Quality	The customer's perception of the product's quality
Value for Money	The customer's perception whether it worth the paid money

Stronger answers would present a summary table or description of how these factors and dimensions from the specific context for the company given in the question. E.g. a version of the example given in the lectures for a Steel Mill as shown below:

Performance Dimensions	Steel Plant *Associated competitive factors include.....*
Quality	• Percentage of products conforming to their specification • Absolute specification or products • Usefulness of technical advise
Speed	• Lead time from enquiry to quotation • Lead time from order to delivery • Lead time for technical advise
Dependability	• Percentage of deliveries on time in full • Customers kept informed of delivery dates
Flexibility	• Range of sizes, gauges, coatings, etc. • Rate of new product introduction • Ability to change quantity, composition and timing of an order
Cost	Price of products, technical advise, discount, payment terms

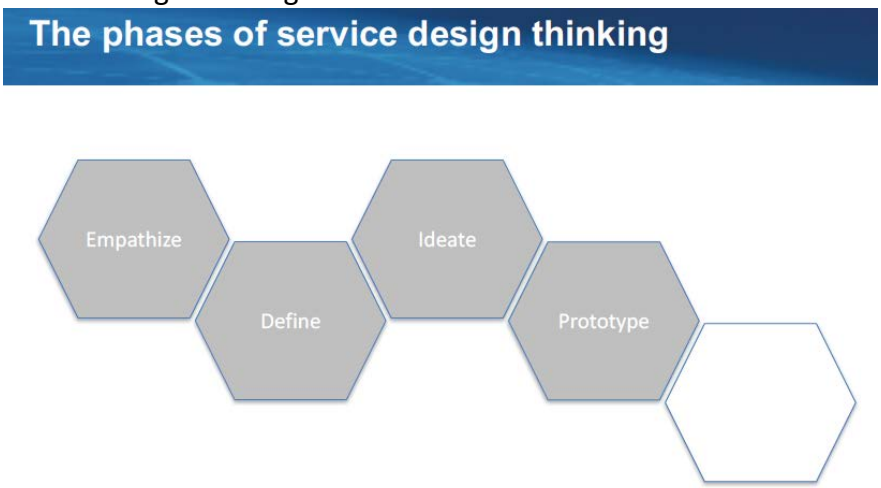
b) **Basic answer** will draw upon some of the new digital service solution examples that have been presented in the servitisation lectures, e.g. Rolls-Royce Total Care, CAT fleet services, etc. that illustrate how data captured from clients can be used to improve service (e.g. reliability) and offer additional services:





Stronger answers should describe the value proposition and value capture (revenue streams) of these new models, and specifically how these lead to both an expanded offering and increased loyalty. E.g. CAT demonstrates its value proposition – by clients providing access to data from use of their assets leads to increased value capture, i.e. clients are willing to pay for the benefits gained (preventative maintenance, improved asset utilisation, and assigning jobs).

c) **Basic answers** introduce a solution for the firm structured around the phases of service design thinking:



An example solution could be the company can contact the garage and offer them a service to help fix the vehicle including:

a. Information about the equipment and the problem including diagnostics data
b. Shipment of spare parts to fix the problem
c. Installation instructions"

This will lead to win-win results:

- The company secures the parts sale
- Garages more likely to recommend Finning for large, complex jobs because of their closer relationship

- Independent garages can reduce stock levels
- Diagnostic information helps garages to fix the vehicle quickly and provide a better service to the customer
- Vehicle fixed with certified parts, improving the quality of maintenance for Caterpillar equipment owners

Stronger answers would describe not just the possible solution but show how these could be developed step-by-step for each phase of the service design process, and to link this explicitly to the challenges being faced by the firm due to the changing commercial context.

Post-exam comments

For part (a), all students could describe, do varying levels of detail, the five operations performance objectives. The better answers were those that focused on how these could be structured for the specific context given in the question (i.e. linking the description to specific issues including the size, sector, market position and scope of the company).

For part (b), all students could give an example of digitally-enabled solutions for the company, but better answers were those that were explicit about how such solutions would expand the offering and increase loyalty, and how this would make sense for the firm in supporting new revenue streams.

*For part (c), many students talked about possible service offerings to respond to the threat in general terms, but the question was quite specific in requiring the use of the **phases** of service design thinking. Stronger answers were able to link the design of the offering to address the specific threat, rather than just describe a possible service offering.*

MET 2B – Paper 2

Question 3

You are the Chief Technology Officer (CTO) of a technology-based venture with 25 employees. Your venture has developed and patented an innovative technology which has a wide range of applications across different industries. The venture has received substantial venture capital investment. Your strategy is to grow the business through licensing the technology to a number of firms in different industries.

Your venture has recently been approached by a very large technology-based firm. This large firm has adopted an open innovation approach. It has identified your venture's intellectual property (IP) as essential for developing a technology that it needs for upgrading its major product. The large firm would struggle to stay competitive without that upgrade. Your venture is the only potential partner the large firm has been able to identify.

(a) Discuss the <u>threats and opportunities</u> for your venture when engaging in collaboration with the large firm. [50%]

Students did fairly well in answering this first part of the question. Most answers show that students have a good conceptual understanding of the open innovation concept and threats and opportunities related to open innovation. However, several students struggle to properly organize their answers by employing frameworks discussed during the lectures (see further details below). Please note, that it was not requested as part of this question to make any recommendations to the company or draw any conclusions.

Some students provided a definition and explanation of open innovation in their answer, often in the beginning, respectively an introductory paragraph. This has however not been part of the question and thus does not merit any marks. However, few students distinguished between the three generic types (see below) and even fewer raised the relevant question of which of the three types the large firm may favour. A risk related to the chosen approach, for instance, may arise from the large firm's open innovation approach running against the small firm's licensing approach, i.e. if the large firm would seek to acquire the small firm. The description of the situation given above makes it fairly clear that the small firm wants to stay independent. An excellent answer would thus be expected to make use of this contextual information as well as other hints (e.g. availability of large venture capital sums to the small firm) to identify specific threats and opportunities from the small firm perspective.

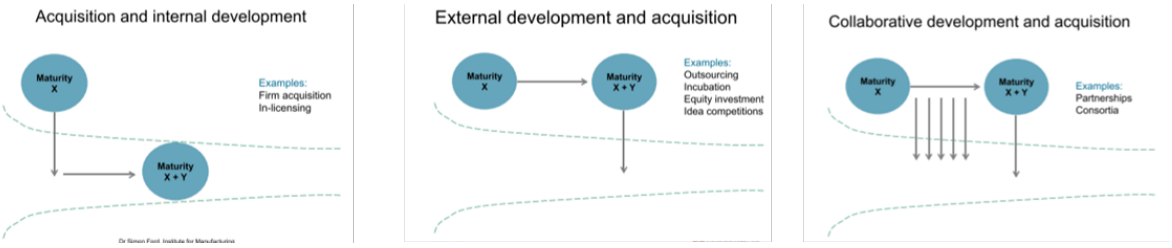


Fig 1: Three generic open innovation approaches

A good answer would be expected to clearly articulate and distinguish threats and opportunities according to the question. It would be expected from any good answer that the wording is precise and specific, particularly about the threats and opportunities that have been identified. For instance, it would not be appropriate for a good answer to conclude on the question that "there are many /

several / some / numerous opportunities and threats". It would be much better to be precise about the number of opportunities and threats that have been identified and are discussed in the answer, which would be more feasible if the answer would employ a framework to organize the material.

Somehow related is the observations that students sometimes miraculously conclude on "… the biggest threat is…" or "the main opportunity…" without any assessment of the threats magnitude. How do we know a particular threat is "the biggest"?

A good answer would be expected to somehow distinguish and structure the threats and opportunities. Excellent answers are expected to employing selected frameworks from the lecture to structure their reasoning. One way of doing so would be referring to the five challenges for open innovation discussed in the lecture and shown below. Without the use of a framework, answers ran the risk of turning out to be rather a collage of information than a meaningful and systematically organized answer.

Fig 2. Open innovation challenges

An excellent answer may conclude in light of the second part of this question that a substantial threat to the small firm results from the uncertainty about the large firm's open innovation approach and hence the risk that the large firm may favour to acquire the small firm, which runs contradictory to the small firm's business model that is based on licensing.

Another specific threat for the small firm arises from the strong dependency of the large firm on the need for this technology coupled with the "abundant" resources available to it and the strong bargaining power of the small firm. If the small firm overstretches it bargaining power, the large firm may attempt to invalidate the patent or infringe the patent thereby risking that the small firm has to spend lots of their limited resources on legal prosecution and enforcement actions. Even given the strong VC backing, this may still drown the small firm resources.

It is usually beneficial to use illustrations in answers, but only if they serve a clear purpose. If any illustration is used, a good answer would have been expected to reference it in the text. Excellent answers usually provide a brief summary or conclusion section at the end, which may hint towards conducting a more systematic approach to gain a more detailed understanding, e.g. by referring to other suitable frameworks, such as a SWOT analysis.

(b) Discuss what you, as the <u>venture's CTO, should consider</u> when discussing IP ownership and usage rights during contract negotiations with the large firm.

[50%]

Building on the first part of this question, the second part addresses the issue of preparing for negotiations with the large company. The question was not meant to speculate about the operational considerations of a possible licensing agreement, such as the royalty rate, but rather to focus on the strategic and tactical considerations. Again, any good answer would be expected to be precise and avoid phrases, such as “many things should be considered”.

A precise and well-structured answer that is not a collage of information is most likely to be achieved by employing a framework for organizing the answer, such as different scenarios, the ISAEP model of framework for different types of collaborations. As a result of this, an answer would not appear to be an opinion of an informed individual, but rather a systematic analysis of a situation with a synthesis from which recommendations are drawn. It remains to be difficult for an answer to be judged good, if essentially a list of items is presented without any logic. For instance, stating “… the first consideration…” without any further explanation of why this is the “first” appears to be difficult.

Possibly, in a first part of an answer, an excellent answer would discuss the purpose of the preparations for the negotiations, such as to further maximize the bargaining power or in other words to maximize value capture from the technology through strategic exploitation before attempting to discuss details. Also, even though information about the case is fairly limited, a good answer would demonstrate that it makes use of the limited information provided. A first and fairly straight forward conclusion to be drawn from the description of the situation is that the small firm is in an excellent negotiation position, which provides it with substantial bargaining power. The small firm’s situation is even so strong so they could walk away from any negotiations given that they have multiple options to license out their technology, i.e. many outside options / high demand for their technology.

On top of building an argument of the limited information provided explicitly in the case description, an excellent answer may also build on the findings from the first part of the question, for instance, that the preferred open innovation approach by the large firm may clash with the small firm’s strategy, i.e. acquiring the small firm vs. the small firm’s business model to license and grow. Hence, an excellent answer could conclude that the small firm needs to device a negotiation strategy that supports it to avoid being acquired, but rather strike a licensing deal with the large firm, for which it could make use of its excellent bargaining position given that it possesses a monopoly for a technology on which the large firm is dependent on, despite the rather generic goals to maximize returns from a deal with the large firm.

Good answers would demonstrate a profound understanding of IP issues, such as the distinction in background and foreground IP, while excellent answers demonstrate a much more detailed level of IP understanding. For a good answer it would be deemed insufficient to only list a number of possible considerations with accompanying descriptions. For instance, it is considered insufficient for a good answer to list and describe a set of possible licensing types (e.g. non-exclusive, exclusive) and / or licensing clauses (e.g. grant back, non-assertion). Good or rather excellent answers may however refer to those types and clauses in their arguments or even make use of them to support their arguments.

An excellent answer would be expected to set out the structure of the answer in an introductory paragraph and finish the argument with a short conclusion paragraph. It would be expected from an excellent answer that it concludes a set of recommendations for the CTO of how to prepare for the negotiations. Furthermore, an excellent answer would make use of examples throughout. It is important that the answer clearly shows that the approach to addressing the question is not legalistic, but rather managerial.

Question 4 - Crib

(a) *Value uncaptured* is a new perspective on value, which can be applied as a lens for sustainable business model innovation. There are four forms of value uncaptured: value missed, value destroyed, value surplus and value absence:

- Value missed is the value currently wasted, inadequately captured or lost, e.g. not using specialist knowledge, inefficient use of data.
- Value destroyed represents the negative outcomes of current business, e.g. pollution, bad working conditions.
- Value surplus is the redundant value which is larger than the requirement, e.g. overcapacity of labour, excess functionality.
- Value absence is value which is required but has not been created, e.g. lack of skills, unmet customer needs.

Value can be defined as a broad set of benefits derived by stakeholders from an exchange, which includes economic, environmental and social considerations. Value uncaptured can be identified by examining the value exchanges in the business network for failures. Failed value exchanges can be uncovered through the four forms of value uncaptured:

Value missed:	I give but don't get a return.
Value destroyed:	I give but you don't want.
Value surplus:	I have too much.
Value absence:	You want but I don't give.

Once resolved, failed value exchanges can generate new value opportunities to create and capture new value.

A basic answer would explain the theoretical concept of *value uncaptured*. A good answer would additionally suggest ways of identifying value uncaptured in the business network through the lens of failed value exchanges. An excellent answer would also be supported with examples of the four forms of value uncaptured from the case studies discussed in the module and from wider reading.

(b) The Value Explorer tool is a new tool for sustainable business model innovation. It has been developed to elicit failed value exchanges among multiple stakeholders in the business network and thereby uncover new value opportunities through a systematic and structured approach. The tool adopts a multi-stakeholder perspective, through which the exchange of value can be analysed and potential stakeholder conflicts and failures identified to create positive value in the network. It provides a new perspective for practitioners to understand and create new economic, social, and environmental value from their business (Figure 1).

A basic answer would describe the key concepts embedded in the Value Explorer tool:

- Structured approach to thinking about value. The tool facilitates a systematic analysis of value captured, helps identify value uncaptured, and through this analysis prompts the generation of new value opportunities for a company.

- Multiple stakeholder analysis which considers natural environment and society as stakeholders of the firm.
- The Triple Bottom Line applied to the concept of value - i.e. sustainable value which comprises economic value, environmental value and social value - to identify new value opportunities.

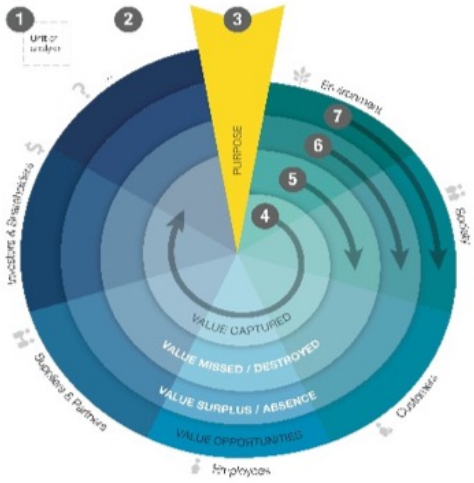


Figure 1 Value Explorer Tool

A good answer would further go through the step-by-step process of the Value Explorer tool with particular focus on value uncaptured (value missed/destroyed/surplus/ absence) in the business network in order to identify new value opportunities for Dresswell.

Steps 1, 2 and 3 – Setting the scene

- Decide the unit of analysis - product/service, business unit, company or an industry.
- Add or modify any missing stakeholders.
- Identify the purpose of the unit of analysis.

Steps 4, 5 and 6 – Map the value

- Map current value captured for each stakeholder.
- Map value uncaptured - value missed / destroyed / surplus / absence for each stakeholder - stakeholder tensions may arise.

Step 7 – Generate new value opportunities

- Extend value captured - doing more of what is done well already.
- Eliminate value destroyed and absence - reducing value uncaptured, turning it into positive value.
- Utilise value missed and surplus - reducing value uncaptured, increasing value in the business network.
- Look for generating solutions - shifting to higher value added.

An excellent answer would additionally make assumptions based on the case studies presented in the module (Marks & Spenser, AB Sugar, Elvis & Kresse, Formula E, Vitsoe, Riversimple, Patagonia) and trends covered in the module as well as general knowledge and understanding of the apparel industry. Examples of new value opportunities could include extending the life of the products through design and material innovation. Organic cotton and natural materials should be investigated to replace mixed materials and toxic chemically treated

fabrics. Opportunities to repair and recycle worn clothes should be considered. Longevity of the product should be sought to achieve longevity of the business.

(c) A basic answer would consider the new value opportunities identified in the previous analysis and translate them into elements and characteristics of a new more sustainable business model for Dresswell.

A good answer would present understanding of sustainable value, i.e. economic, environmental and social benefits of the new business model in the context of outdoors and sports clothes. Emphasis on better management of the end of life of outdoors and sports clothes should be sought. Examples of such sustainable business models for Dresswell could be service-based business models, e.g. rental of clothes and recycling of clothes at the end of their life when they are beyond repair.

An excellent answer would further develop ideas around circular economy principles and put them at the core of the business model. Examples include developing closed-loop material flows; reverse logistics for rental of clothes; repair services for worn clothes; repurposing, recycling and remanufacturing at the end of life of the products.

Notes to examiners:

This question was very popular and was attempted by 35 students out of a 40-student cohort. The majority demonstrated a very good level of understanding of a key innovation tool and provided well-versed answers in the language of value innovation and sustainable business models. It should be noted that the Sustainable Manufacturing module assessment was designed to enable students to develop proficiency in the key concepts of sustainable business innovation. Also, the Sustainable Manufacturing module was the last one in the course.

In part (a) of the question, some differentiation in the answers was found, as candidates chose to go into different degree of depth explaining the concept of 'value uncaptured' and provided various examples of value uncaptured. Examples ranged from basic single generic examples to mini-cases. Some of the weaker answers provided a basic definition of 'value uncaptured' to include value missed/destroyed/surplus/absence. Stronger answers went into more detail around the definition and applied it to case studies, overall, performing a more thorough analysis of the 'value uncaptured' concept.

Part (b) of the question also allowed for differentiation among candidates. Candidates demonstrated good awareness of the Value Explorer Tool and ability to use the tool as a means of identifying new value opportunities for developing a sustainable business model. Weaker answers provided a basic description of the tool and suggested generic forms of sustainable value for the firm, considering a narrow set of stakeholders. Better answers used the tool as an analytical framework and put together a clear logic of the analysis which incorporated a broader set of stakeholders. Some answers went further to identify value captured, value uncaptured and then generate new value opportunities for each individual stakeholder in a systematic and structured way.

In part (c) of the question some differentiation among candidates was found too. Weaker answers listed a few basic sustainability aspects for clothing manufacturing. Stronger answers provided a coherent reflection on sustainable value and a proposed new more sustainable business model for the firm linking it to the prior analysis.

The three parts of the question were answered by almost all those who attempted it.

2018 MET IIB Paper 2 Question 2 – Post-exam Crib

(a) Explain what is meant by *operations strategy*.

[40%]

(b) Describe how an *operations strategy* could be developed.

[40%]

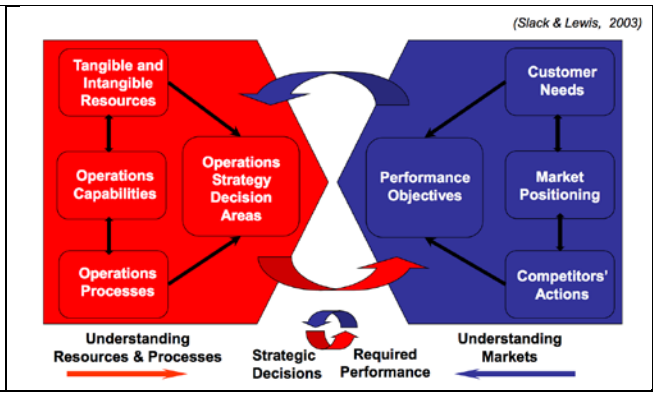
(c) Discuss the linkages between the development of *business strategy* and *brand identity*.

[20%]

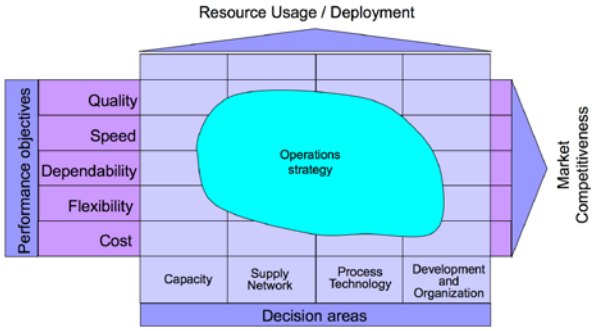
Crib:

(a)

Basic answer would describe operations strategy in terms of an activity within Porter's Value Chain, explained in the context of corporate strategy, or giving the definition from Slack and Lewis: "the decisions which shape the long-term capabilities of the company's operations and their contribution to overall strategy through the on-going reconciliation of market requirements and operations resources". The following diagrams shows the basic idea:



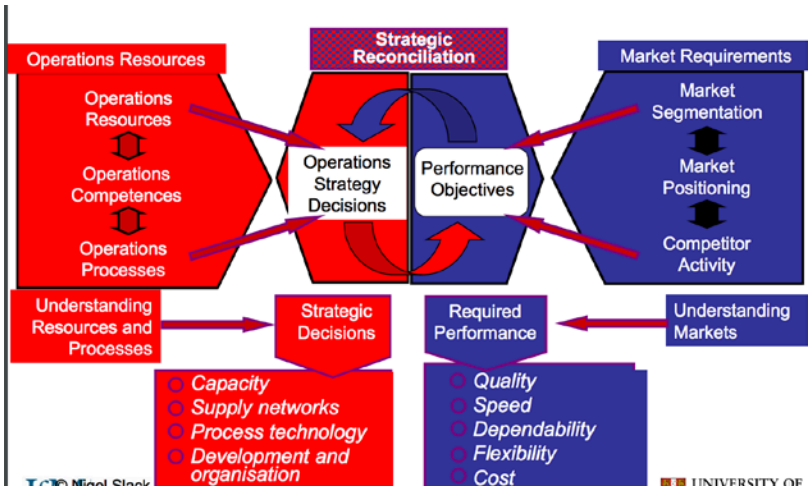
Better answers would consider the interplay between resources, decision and and performance as shown below:



(b)

Basic answers will show how operations strategy will need to start with an understanding of how firm defines its competitive advantage (linked to the performance objectives, and consideration of whether it is market driven or resource led), defines its business strategy, which in turn defines the operations strategy.

Stronger answers will consider the process of defining a firm's competitive advantage in more detail, bringing in consideration of competitive factors/dimensions, order qualifying/winning criteria, leading to competitive priorities, performance objectives, and the weighing of trade-off. Reconciliation of all these issues leads to an implementable operations strategy as shown below:



(c)

Basic answer will discuss following key issues:

1. Two major organisational strategic approaches: • Cost-led - sell it cheap(er) (= Commodity Selling) • Differentiation - be different in a valued way (= Brand Marketing).
2. • Strategy Implementation is about what an organisation says and (especially) does • People 'read' an organisation's Brand Identity by perceiving what it says and does • Therefore, Brand Identity is really the public expression of an organisation's Strategy - Strategy-in-Action

Stronger answers could explore how the processes of brand strategy and business strategy development (in the context of some of the material referred to in (a) and (b)) can be managed in an interconnected manner, and how this is particularly well illustrated in the case example covered in the lectures (Fender, Mercedes, etc).

Post-exam comments:

For part (a), most students could provide a definition (mostly from Slack and Lewis), and present and describe a framework that demonstrated understanding of the interplay between markets and resources, to differing levels of detail and richness. For part (b), weaker answers just repeated part (a) in more detail, whereas stronger ones were able to consider the process by which operations strategies can be developed, and also drew upon a wide range of tools and techniques that firms could use to support this process (e.g. TRM, TI, etc) and the fact that there may be intended and emergent aspects to this process. For part

(c), the question wanted a discussion of the links between development of the business strategy and brand identify, but most students just described what a brand is (using the brand identity prism). Better answers were able to articulate the interplay between the two, and provide examples.

MET 2B – Paper 2

Question 6

6 (a) Explain the differences between:

(i) brand;

An intangible asset linked to the outside world perception of a company and its products / services often associated with a brand value. The brand is often a subjective view of a product or service or combination thereof. Brands exist on different levels, such as the product, product line, and corporate level, e.g. Daimler, E-class. Brands need to be build, nurtured and managed as customer perceptions may change over time.

(ii) trademark;

A trademark is an intellectual property right to protect a brand that needs to be registered in most of the countries. It can often last forever, but needs to be kept enforced and prevented from becoming generic, which happened to some iconic products. Different types of trademarks exist, such as for symbols, names, icons, combinations thereof.

(iii) and product.

The embodiment of components assembled by a company, which do not need to be physical (e.g. software is often perceived as a product), often transacted to customers.

[15%]

Excellent answers may present different conceptualizations for the different types and contrast those. Excellent answers will not only describe what a brand, trademark and product is, but rather attempt a comparison. Excellent answers may provide examples point out the specific differences, possibly even from the same firm. Excellent answers would also be expected to make links to the literature or at least material discussed in the lectures, e.g. the Kapferer brand identify image or Kotler brand level framework.

(b)

Illustrating your answers with examples, sketch and describe what is meant by:

A good answer presents an illustration for each of the three types as presented and discussed in the lecture with full details, such as axes labels, distribution shares. Good answers may add examples to illustrate the phases of the curves and potentially specific segments, such as early adopters and Moore's Chasm. A more detailed description of each model phase would be expected from an excellent answer.

(i) a technology 'S-curve';

A curve with technology performance development over time with four phases (emerging, pacing, key, base). The S-curve usually includes and depicts a technology generation shift shown by a second s-curve, sometimes illustrated as a discontinuity.

(ii) a consumer adoption curve;

A curve with either the rate of adoption out of 100% or the market share over time with five adopter types (innovators/techies, early adopters/visionaries, early majority/pragmatists, late majority/conservatives, laggards/sceptics). Excellent answers may also provide an adoption function.

(iii) and a product life-cycle.

A curve with sales or revenues over time and four phases usually (introduction/ embryonic, development/growth, maturity/ decline). If profit over time is depicted an additional phase is usually included upfront, which is the development phase where profits are negative.

[35%]

(c) Discuss how the concepts from part (a) and (b) can be used by a product manager to support the launch and subsequent management of an innovative product to maximise value capture for the firm.

[50%]

For answering this question, good answers demonstrate that they make use of the concepts from part (a) and models in part (b). Excellent answers demonstrate that they really use these concepts and models for underpinning their arguments. Please note that the question has particular asked students to use the concepts and models from the first and second parts of this question. Consequently, the question did not ask the students to introduce other concepts, such as the 7p marketing mix or the use and role of patents along the product lifecycle.

Good and excellent answers usually start with an introductory paragraph briefly outlining and describing the role of a product manager (i.e. being responsible for product profitability, commanding authority; brand / market responsibility; technology management). The product manager is not only involved in the new product innovation process, but also responsible over the entire product lifecycle, plus eventually the new generation, which may require new technology and managing the transition. Outlining the product manager's role actually makes it already fairly obvious how that role links with the product lifecycle model.

Good and excellent answers are expected to convey that the students have acquired an understanding that product management is dynamic and needs to adopt over time. For that reason, good and particularly excellent answers have chosen to structure their answer along the product life cycle phases. This has usually worked well to integrate the different concepts and models and build solid arguments. Using such structure helps to avoid that an answer appears to be rather a collage of information.

Good and excellent answers then discuss the different issues, such as the different adopter groups and the role of brands and trademarks in the different lifecycle phases. For instance, the adoption model helps to anticipate the Moore's Chasm in an early lifecycle phase, so that the product manager can take preventive actions to manage crossing the chasm. A related example would be the need to adjust the product marketing over time so it fits with the preferences of the different

adopter types (e.g. more techie messages early and more mainstream messages later). Another example would be the importance to establish a brand in an early stage, then protect it by trademarks, which however might only become important in later lifecycle stages to prevent decline through brand loyalty and preventing product copying. Over time, maybe even the trademark need to be adjusted to match and align with the preferences of the different adopter types. One of the students, for instance, gave a good example of how Apple adopted the trademark from more techie appearance to more mainstream appeal along with their evolution from a computer to an entertainment and consumer company.

Excellent answers typically provide a concluding paragraph critically reflecting on the use of these concepts and models in practice, hence their practical limitations.