



Name: Aditya Prawira

RMIT ID: s3859061

Assignment Title: Innovation and Technology Management Questions (individual assessment)

Due Date: August 18th, 2020

Word Count: 1184

Question 1.

Outline a number of key areas that should be considered prior to introducing a new technology or innovation into an engineering project. Why is it important to consider these upfront?

Key areas to be considered:

1. Economic advantage
2. Environment
3. Source of innovation
4. Innovation Strategies
5. Competitive advantage
6. Value of proposition
7. Technology development
8. Implementation Strategy
9. Risk and reward.

Firstly, considering economic advantages that can be achieved through the innovation offered in long term. It is important to consider how the innovation can be beneficial for the surrounding environment or how the offered technology won't hugely impact the environment. This consideration enables innovation to gain support externally/internally.

Secondly, it is important to consider of new knowledge in any area or create opportunity for new technology as source of innovation. Hence, new innovation that is impactful to the world and society. Strategies are required to introduced an innovation in an engineering project is essential. This would allow for planning in order to grow profit or market share through product or service of an innovation. Furthermore, the definition of competitive advantage is to provide more advantage(s) to be gained over other competitors by introducing/offering consumers better value (Riley 2018). The area can cover economic, social and environmental factors (Bateman 2020). The idea is to analysis how the innovation satisfies consumer needs and deal with any uncertainty. In real application, the idea can be in form of minimal price, greater benefits or service/product that justifies higher price.

Finally, for it is important to research and gather all information about the abilities of an introduced new technology. This is crucial in order to convince stakeholders why the offer is far more superior than other competitors and how the offer will provide long term benefits (Bateman 202). On the other hand, technology development needs to be considered because it allows evaluations of support, developmental, and business strategies of the technology. Furthermore, the process will essentially evaluate and manage risks and objectives to be met by the technology while maintaining schedule, performance, and cost (Technology Development Strategy (TDS) – Acqnotes 2017). This process will be useful for the future sake of the offered technology and how any potential obstacles can be tackled. Which lead to implementation strategies which discusses of how implementation and sustainability of the technology can be enhanced to achieve objectives and goals of the innovation. However, on top of all, risk and reward must be analysed. Utilizing Figure 1 below, it analyses in which quadrant will the innovation will be placed at. Therefore, it is really important to innovate a technology that will be placed at quadrant 2 (Q2) as this condition is what most optimum condition to interest stakeholders.

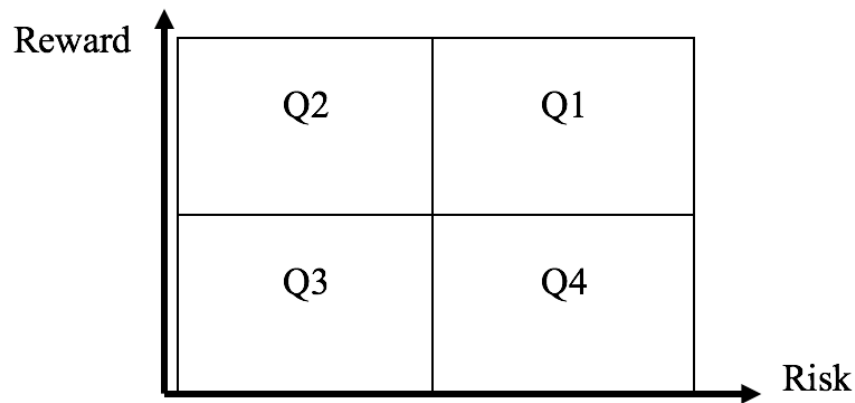


Figure 1: Risk and Reward Diagram (Bateman, 2020).

Question 2.

Why might you choose a radical approach compared with an incremental approach to innovation? Explain your reasoning.

Radical approach will generate new unique innovation that has never been introduced before. It creates opportunities for a huge win as a stand out contenders in an industry. Whilst, the approach will potentially cannibalize the existing offerings. Impactful innovation will create a huge success in long term (Hopp et al. 2018). As technology develop with time, the approach is essential to develop new revolutionary technologies, market or even business model that will create huge impact to the society. However, this approach is a complex, long, and risky process to achieve innovation (Rodriguez 2017). An unsuccessful application of this approach will to huge loss socially, and economically.

Incremental approach is to improve the existing technologies or products by enhancing their performance, efficiency, and minimize cost. Furthermore, the approach is less risky compare to radical approach (Schroedel 2019). At some point this approach is utilize after radical approach. This method allows to recreating new business model without cannibalizing the existing ones and protect the current business model. It supports sales/profit of existing products, keep cost under control, and maintain competition in the industry. Hence, it allows an organization to remain relevant to consumers. However, the success will only impact in short period of time. Due to the possibility of competing with existing/new competitors with the similar idea. R&D department resources remain competitive and difficult to gain recognition from any changes being made (Rodriguez 2017).

Considering Project 1 case, radical approach is suitable for Light Vehicle Greenhouse Gas Emissions project. Since the technology introduced is a piece of technology that hasn't been introduced before. Furthermore, as there is a risk that Paris Agreement Obligations can't be met (2017 Review of Climate Change Policies 2017), therefore incremental approach won't be suitable for the application of this project. Hence, radial approach. Furthermore, Australia is a bit behind from Europe and US to achieve this technology. Therefore, the approach allows Australia to remain competitive with European and US which targets of 105g CO₂ per Km in 2025 (LIGHT VEHICLE EMISSIONS STANDARDS FOR AUSTRALIA RESEARCH REPORT 2014). The approach should be applied in order to fight global warming, which is a huge occurring global issue. Since Europe and US has the same objective, therefore, radical approach will be more advantageous to differentiate Australia's approach to tackle the problems at hand. Hence, this will provide competitive advantage for the project.

Question 3.

Briefly describe what is meant by ‘value proposition’. Provide a succinct overview of a new technology or innovation relevant to one of the project options. Outline the new technology or innovation’s ‘value proposition’

In simple term, “value proposition” is to promote how our offering will solve problems or improves situation (Bateman 2020). It is required to deliver specific benefits from offer and convince the stakeholder why they need to choose “your” offer over other competitors. Hence, it is required explain the overall advantages of the offer relative to the risks. Considering project 1 case which offer a Light Vehicle Greenhouse gas emission technology, below are list of the project “value proposition”.

Light Vehicle Greenhouse Gas Emissions project list of values:

1. By Making light vehicle more efficient, it provides opportunity for Australia to reduce greenhouse gas emission and fuel cost for Australian motorists.
2. Technology to reduce the use of fuel and emission is available and inexpensive.
3. Hence, lower cost emission which is beneficial for Australian Economy.
4. Light house emission standard will outweigh cost for both private and national level.
5. Whilst, a 105 g CO₂/km target will rise cost of new car for \$1500 in the first year, it will provide benefit of \$830 for fuel savings and \$8500 over the life of vehicle (LIGHT VEHICLE EMISSIONS STANDARDS FOR AUSTRALIA RESEARCH REPORT 2014).
6. Hence, save and prevent emission for \$580 in Australia for each avoided CO₂.
7. The project is projected to save more than \$2000 per year since 70-90% are cheaper to operates (Whitehead 2019).
8. Since, Australia dependent on imported fuel and hold reserves far below International Energy Agency’s obligated 90-day supply. Therefore, transportation system in Australia will be secure by transitioning transportation system to electric vehicle.
9. 40% - 60% premature deaths caused by Vehicle pollution than road accident fatalities in Australia and Electric car create pathways to avoid these deaths (Whitehead 2019).

Regarding to the project, the organization must convince stakeholders how the technology offered from this project is superior to that compare in Europe and US (Efficiency, Economically, Environmentally, Globally and Socially). Since, Global Warming has been a huge issue in the recent year and it would be a problem in Australia in Summer. Since the potential for bush fire to occur is high. Then, by introducing the mechanism of the project to reduce climate change or potential bush fire will provide more advantages for the project externally. In the scenario when stakeholders are convinced, Light Vehicle Greenhouse Gas Emission project is will gain support, attention, and potential funding source. Furthermore, in this critical condition, the project must research and provide convincing information/solution of how this project will tackle the problem at hand despite in COVID-19 situation.

References:

2017. *2017 Review Of Climate Change Policies*. Commonwealth of Australia.

AcqNotes | Defense Acquisitions Made Easy. 2017. *Technology Development Strategy (TDS) - Acqnotes*. [online] Available at: <[Australian Government| Climate Change Authority. 2014. *LIGHT VEHICLE EMISSIONS STANDARDS FOR AUSTRALIA RESEARCH REPORT*. \[online\] Available at: <<https://www.climatechangeauthority.gov.au/sites/default/files/2020-06/Light%20Vehicle%20Report/LightvehiclesreportSummary.pdf>> \[Accessed 10 August 2020\].](http://acqnotes.com/acqnote/acquisitions/technology-development-strategy#:~:text=The%20Technology%20Development%20Strategy%20(TDS)%20describes%20the%20acquisition%20approach%20that,Initial%20Operational%20Capability%20(IOC)>> [Accessed 9 August 2020].</p></div><div data-bbox=)

Bateman, S., 2020. *Innovation And Technology Management | OENG1115 Module 1*. Melbourne: RMIT University.

Chase Consulting Group: Innovation and Strategy Specialists. 2020. *Five Steps To Develop A Solid Business Case — Chase Consulting Group: Innovation And Strategy Specialists*. [online] Available at: <<https://www.chasegroup.com.au/five-steps-to-develop-a-solid-business-case>> [Accessed 7 August 2020].

Council, C., 2017. *Transport Emissions: Driving Down Car Pollution In Cities | Climate Council*. [online] Climate Council. Available at: <<https://www.climatecouncil.org.au/resources/transport-fact-sheet/>> [Accessed 10 August 2020].

Docherty, P., 2018. *Developing A Technology Strategy*. [online] IFAC. Available at: <<https://www.ifac.org/knowledge-gateway/preparing-future-ready-professionals/discussion/developing-technology-strategy-0>> [Accessed 7 August 2020].

Gardner, D., 2017. *Radical Vs. Incremental Innovation - Maru/Matchbox*. [online] Maru/Matchbox. Available at: <[Harvard Business Review. 2020. *Implementing New Technology*. \[online\] Available at: <<https://hbr.org/1985/11/implementing-new-technology> <https://fmlink.com/articles/strategies-for-implementing-technology-projects/>> \[Accessed 16 August 2020\].](https://marumatchbox.com/radical-vs-incremental-innovation-the-right-approach-for-the-right-time/#:~:text=Radical%20innovations%20are%20focused%20on,them%20better%2C%20cheaper%20or%20faster.>> [Accessed 9 August 2020].</p></div><div data-bbox=)

Hopp, C., Antons, D., Kaminski, J. and Salge, T.O., 2018. *What 40 Years Of Research Reveals About The Difference Between Disruptive And Radical Innovation*. [online] Harvard Business Review. Available at: <<https://hbr.org/2018/04/what-40-years-of-research-reveals-about-the-difference-between-disruptive-and-radical-innovation>> [Accessed 9 August 2020].

Leonard-Barton, D. and Kraus, W., 1985. *Implementing New Technology*. [online] Harvard Business Review. Available at: <<https://hbr.org/1985/11/implementing-new-technology>> [Accessed 7 August 2020].

Ntc.gov.au. 2020. *Carbon Dioxide Emissions Intensity For New Australian Light Vehicles 2019*. [online] Available at: <<https://www.ntc.gov.au/sites/default/files/assets/files/Carbon-dioxide-emissions-intensity-for-new-Australian-light-vehicles-2019.pdf>> [Accessed 10 August 2020].

Olsen, E., 2020. *Strategic Implementation | Onstrategy Resources*. [online] OnStrategy. Available at: <<https://onstrategyhq.com/resources/strategic-implementation/>> [Accessed 13 August 2020].

Riley, J., 2018. *Competitive Advantage | Business*. [online] tutor2u. Available at: <<https://www.tutor2u.net/business/reference/competitive-advantage#:~:text=A%20competitive%20advantage%20is%20an,service%20that%20justifies%20higher%20prices./>>> [Accessed 9 August 2020].

Rodriguez, A., 2017. *Two Strategic Approaches To Innovation: Incremental Vs Radical — Business Model Innovation Lab | BMI Lab | Spinoff From The University Of St.Gallen*. [online] Business Model Innovation Lab | BMI Lab | Spinoff from the University of St.Gallen. Available at: <<https://bmilab.com/blog/2017/8/3/two-strategic-approaches-to-innovation-incremental-vs-radical>> [Accessed 9 August 2020].

Pratap, A., 2018. *Seven Sources Of Innovation By Peter F Drucker*. [online] notesmatic. Available at: <<https://notesmatic.com/2016/09/sources-of-innovation/#:~:text=New%20knowledge%3A%20New%20knowledge%20can,is%20a%20source%20of%20innovation.>>> [Accessed 7 August 2020].

Schroedel, J., 2019. *What's The Difference? Radical Vs. Incremental Change - Citizenlab*. [online] CitizenLab. Available at: <<https://www.citizenlab.co/blog/e-government/whats-the-difference-radical-vs-incremental-change/>> [Accessed 9 August 2020].

Strategyn. 2020. *Innovation Strategy - Product Innovation Strategy - Strategyn*. [online] Available at: <<https://strategyn.com/innovation-strategy/#:~:text=An%20innovation%20strategy%20should%20inform,through%20product%20and%20service%20innovation.&text=When%20it%20comes%20to%20creating,breakthrough%20innovation%20approach%20is%20best.>>> [Accessed 7 August 2020].

Whitehead, J., 2019. *Clean, Green Machines: The Truth About Electric Vehicle Emissions*. [online] The Conversation. Available at: <<https://theconversation.com/clean-green-machines-the-truth-about-electric-vehicle-emissions-122619>> [Accessed 10 August 2020].