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**ANL201 – Data Visualisation For Business**

**TMA01**

**T02**

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**Plagiarism and Collusion**

**Plagiarism** is the act of using or passing as one’s own, the ideas or writings of another without acknowledging or crediting the source from which the ideas are taken from.

**Collusion** is the act of submitting any academic work (including assignment, project or report) that was completed by another person and pass these work off as one’s own.

**Declaration**

I declare that this assignment is my own work, unless otherwise acknowledged or credited by appropriate referencing. I have read and abide by the SUSS Honour Code and I am aware of the penalties associated with plagiarism and collusion listed in the Student Handbook.

**Q1a)**

Microsoft’s Mission statement is “ to empower every person and every organization on the planet to achieve more.”

From the key terminology “empower”, we can infer that Microsoft aims to empower people and organisations through the utilisation of their products where third parties are able to leverage on them. Thus, Microsoft aims to provide the tools and ability to users where can capitalize on them to accomplish what they want, giving them a sense of empowerment.

The second component “every person and every organization on the planet” infers that Microsoft would like to reach out to more users across the globe. Since Microsoft do have a wide range of products, they are able to cater to the needs of various individuals at different levels, while also appealing to many different industries. This is evident by their cloud computing services and Azure applications where they are adopted by various industry for various purposes. Thus, emphasizing that they would like to reach out to everyone without discrimination, regardless of whether it is for individual or organisation purposes.

Lastly, “to achieve more”, emphasizes that Microsoft aims to help their users to accomplish more in their endeavours and to exceed expectations. Especially since many of their products are able to greatly support the daily work of users to help improve their efficiency and productivity. Thus, Microsoft aims to help users achieve greater heights in their endeavours and work through the use of their technology.

**Q1b)**

Based on the shareholder letter, Microsoft’s vision statement could be “ To be the world’s most dynamic organisation with the ability to support the world through partnership and technological innovation long into the future.”

The key terminology “dynamic organisation” can be inferred from the shareholder letter where it mentions about Microsoft’s technology breakthroughs, focusing on a holistic approach in utilizing various technology to support their customer’s needs.

Software such as GitHub is able to help developer in writing codes, Azure provide cloud services for data management and analytic, dynamic 365 allows the digitalization of business processes, and Microsoft 365 creates an all-purpose platform for communication and collaboration. This emphasizes that Microsoft do provide various tools for their customers depending on their needs. Therefore, it can be inferred that Microsoft strive to be the most dynamic organisation in the world with the ability to meet the ever changing needs of their customer by providing them new technological innovation.

The second component of the vision statement, “ability to support the world ”, can be inferred from “empowering everyone - consumers, students, teachers, and the more than 2 billion first line workers around the world.” In addition to the types of people Microsoft is supporting, Microsoft also emphasizes on the type of organisations they are supporting, such as MNCs, non-profit, government and small businesses. Lastly, Microsoft is collaborating with organisations from various sectors such as “retailers, healthcare providers, and manufacturers”. Thus, this proves that Microsoft is reaching out to everyone around the world regardless of their background with the mentality of helping every one of them.

The third component of the vision statement, “ through partnership and technological innovation” is inferred from how Microsoft is working towards partnerships where customers and partners are “independent with us, not dependent on us.” It is through partnerships where Microsoft is able to innovate and create new businesses together with customers, in helping them improve their digital capability. Companies such as AT&T and Walmart are partnering with Microsoft “to build the technology they need to compete and innovate in a time of unprecedented change.” They are also partnering with both tech and public sector to address cybersecurity threats which are only possible through active collaboration. Thus, this emphasizes the importance of partnership in Microsoft’s strategy which also affects their innovation capabilities.

Lastly, this vision would be sustained “long into the future.” Microsoft’s shareholder letter mentions about how they are continuing innovating and “investing in large and growing markets to help them digitally transform — today and long into the future”. They have placed strong emphasize on environmental and corporate social responsibility with initiative such as 100% renewable energy data centers. Adopting a greener business process would allow Microsoft to not only help the environment but also ensure the sustainability of their organisation to thrive in the future.

**Q1c)**

**The first strategic theme** **is technology innovation**, which is categorize under the learning and growth perspective of the Balanced Scorecard. As mentioned in Microsoft annual report, “Our growth depends on securely delivering continuous innovation and advancing our leading productivity and collaboration tools and services”. Microsoft places heavy emphasis on innovation which is reflected through the diversity of services and tools provided. Continuous innovation allows Microsoft to constantly revamp and upgrade their current products such as the addition of Azure Stack HCL and Azure data box edge to Microsoft’s Azure. As mentioned in the highlights of Microsoft’s fiscal year of 2019, “Server products and cloud services revenue, including GitHub, increased 25%, driven by Azure growth of 72%.” Thus, this strategic theme also relates to the financial perspective of the balance Scorecard, highlighting a strong linkage between both perspective.

Microsoft’s technology innovations can also be seen in their investment in a range of emerging technology trends and breakthroughs in order to ensure they are able to meet the everchanging needs of their customers. They have a corporate research organisation called Microsoft Research. Microsoft Research focuses on advancing “the state-of-the-art in computer science and a broad range of other disciplines.” This would provide Microsoft a perspective on future trends which contributes to their continuous innovation efforts.

**The second strategic theme is increasing customer base**, which is categorize under the internal process perspective of the balanced scorecard. As mentioned in Microsoft’s annual report, Microsoft has a diverse customer base where they are supporting organisations and individuals from various industries. Microsoft also emphasizes on the type of organisations they are supporting, such as MNCs, non-profit, government and small businesses. Microsoft views partnering with organisations on their digital transformation journey is their largest opportunity where they are well position to be the partner of choice. This is possible through the wide range of services and tools Microsoft has to offer where they are able to meet the specific needs of their customers. By increasing the number of customers, they are also able to experience economies of scale. This is seen in their cloud business where Microsoft is able to “deploy computational resources at significantly lower cost per unit”, and “lower application maintenance labour costs”. Increasing customer base also links to the financial perspective of the balance scorecard through an increase of revenue generated.

**The third strategic theme** **is increasing sustainability**, which is categorize under the internal process perspective of the balanced scorecard. It is stated that one of Microsoft goal is to “lead the industry in several distinct areas of technology over the long-term, which we expect will translate to sustained growth.” Considering Microsoft is already established as one of the biggest technology services organisation in the world, they would need to alter their internal operational processes to ensure sustainable scalability and growth.

Microsoft would need to consider what resources and capabilities are needed to thrive in the future where resources might be scarce due to over depletion of natural resources.

It is evident from Microsoft’s annual report that they are continuously lowering their carbon footprint with the goal of reducing reduce operational emissions by 75 percent by 2030. Possible measures for sustainability could be percentage of carbon emission and amount of carbon tax paid. In addition, Microsoft is planning to build 100% renewable energy data centers with zero-waste operations. This not only highlights the relevance of increasing sustainability in Microsoft endeavour to work towards an environmental friendly future, but also shows Microsoft incorporating this theme to their internal operational processes to ensure a smoother transition into the future. This strategic theme also relates to the learning and growth perspective as highlighted by the relationship between Microsoft’s internal process and their ability to grow in the future.

**The fourth strategic theme** **is the cultivation of trust**, which is categorize under the customer perspective of the balance scorecard. Microsoft believe that “responsibility is about earning and sustaining the trust of the customers and partners we empower and the communities in which we live and work.” The cultivation of trust between Microsoft and their partners is reflected in the products and services offered by Microsoft. This is highlighted through Microsoft’s three pillars approaches, privacy, cybersecurity, and responsible AI. By cultivating trust, customers are more to work alongside Microsoft and incorporate their technology into their businesses. This would lead to increase in customer loyalty while ensuring a positive relationship with their customers and users. This strategic theme is also linked to the financial perspective of the balance scorecard since customers would continue to use their products, generating a constant revenue stream.

**The fifth strategic theme is revenue growth** which can be categorize under the financial perspective of the balance scorecard. As mentioned in Microsoft’s annual report, Microsoft’s revenue have increased from $110 billion in 2018 to $125 billion in 2019. Revenue growth is also reflected in different product segment. Microsoft’s cloud revenue have increased by 43%, Office Commercial revenue increased 13%, Office Consumer revenue increased 7% and Windows Commercial revenue increased 14%. This emphasizes that revenue growth is a recurring theme in the different various technology segments where it is prioritize in different parts of the organisation.

**Q1d)**

In the **first stage** of data visualisation process, “Data Collection and Storage”, Microsoft would be required to collect and store large amount of data for both internal and external usage. As mentioned in the shareholder letter, Microsoft is engaging with various organisations from different industries, and is supporting more than 2 billion first line workers. Collecting and storing such a large amount of data might be challenging for Microsoft since it is time consuming and requires much effort. The data collected would also most likely be reduced during the processing stage where a huge portion of the data will not be used, making it redundant to expand so much resources into data collection and storage.

In addition, Microsoft’s Azure is their main platform for data collection and storage. However, since Azure is a cloud based platform, it does require manpower management to support the server and to ensure all data is properly collected and stored. Thus, this might cause Microsoft to expand more resources in this stage, incurring additional cost and expenses.

The **second stage**, “Data Pre-Processing”, requires Microsoft to process the data through various steps such data cleaning, data transformation and data reduction, to ensure that the data is understandable. Microsoft might face the challenge of having adequate expertise to process the mass amount of data from the various organisations and industries they engage with. As mentioned in their annual report, organisations ranges from industries such as healthcare education and F&B etc. The type of data available would differ between each organisation depending on what data they are collecting, with different data pre-processing processes depending on the objective of what the data is measuring and it’s purpose.

For example, Microsoft might be required to pre-process data for their Xbox gaming division to visualize data on countries with the most game pass subscription. However, they might need to adopt a different methodology to pre-process data for their healthcare partner to determine revenue generated. The data for countries with the most game pass subscription are in ordinal measurement and might require more colours to differentiate between countries if they decide to present the data as a map. Processing data for revenue generated would require the data to be clean and converted specific ratios and percentages. Thus, since Microsoft do engage with a variety of industries which requires specific data processing methodology, they might face the challenge in having the right expertise to properly process all of their data.

The **third stage**, “Graphics Engine”, revolve around the display hardware and the graphics algorithms to produce Data Visualisation on screen. Microsoft does possess many type of data from their respective partnerships with various visualization methodology for each of them. The data might be required to be displayed differently depending on the type of data and the purpose behind visualizing it. This might create a challenge of having a standardize graphics engine that could accurately display all their data.

For example, numerical financial data can be visualize in table format with little use of colours. However, Microsoft has also been collecting data for their environmental friendly initiative which might require to display data as images to depict “the conditions of our air, water, land, and the well-being of our wildlife” (Microsoft Shareholder letter, 2019).

This requires the data to be visualized as images with higher intensity colour as visual cue to portray an accurate depiction of the data. Thus, Microsoft might need to utilize multiple graphic engine to visualize the various type of data on hand, which would incur additional cost and require more resources.

The **final stage**, “Human Visual and Cognitive Processing”, revolve around how viewers perceive, interpret and visualize data. Microsoft does process and visualize data for both internal usage and their customers. However, Microsoft faces the challenge of ensuring that viewers are able to interpret the data accurately. Viewers who lack the fundamental understanding and knowledge of the data visualized might not understand the data and misinterpret the data. For example, financial data might be process and visualized into graphs or financial ratios as arbitrary representation. This can be seen in Microsoft’s annual report where they disclosed their 2019 financial results and earnings. Arbitrary representation usually requires viewers to have some knowledge of the subject matter to be able to accurately understand the data. If viewers do not have a basic understanding of how to read financial statements, they would not be interpret the data successfully which render the data redundant.

**Q1e)**

**The first interesting point is the Microsoft’s acquisition of LinkedIn** and how they are incorporating it into their business and services. LinkedIn is one of the most establish professional network database in the world with various services such as talent, marketing and sales solutions. Microsoft has acquired LinkedIn back in 2016 and has now more than 645 million members. LinkedIn revenue has increased by 28% from 2018 to 2019 mainly from their commercial portion which includes “LinkedIn Recruiter, Sales Navigator, premium business subscriptions.” After acquiring LinkedIn, Microsoft has integrated

integrated LinkedIn with Dynamic 365 and Microsoft 365. The integration of LinkedIn and Microsoft office 365 offers an integrated one-site collaborative platform with a shared network system, which increases communication efficiency and allows for better collaboration. In addition, “Microsoft Relationship Sales solution brings together LinkedIn Sales Navigator and Dynamics to transform business to business sales through social selling.” From these examples, we can see how Microsoft acquisition of LinkedIn is a strategic choice since they are able to seamlessly apply their existing technology onto it. Thus, they are able to value add and improve on the existing functions of LinkedIn, to improve user experience and work efficiency.

This acquisition is beneficial to Microsoft since numbers of LinkedIn users have growth with an increase of revenue generated by LinkedIn as shown in their financial statements. This acquisition highlights Microsoft ability to strategically expand their business by targeting organisations where they can value add to the acquired organisation’s business by leveraging on their own technology. Thus, Microsoft should continue to capitalize on strategic acquisition in sourcing for companies which are already well establish but could greatly benefit from Microsoft’s technology. This would create a symbiotic relationship where the acquired company could leverage on Microsoft’s technology, and Microsoft could benefit from the acquisition by expanding their business to increase revenue.

**The second interesting point is in regards to their phone business**. Microsoft’s phone business have not been successful over the past few years even after they acquired Nokia’s smartphone business. This could be attributed to the failure to capture market shares and large amount of negative feedbacks on their smartphones. Microsoft’s trademark device, Windows phone, ceased development in 2017 and was discontinued (Tom Warren, 2019). Microsoft’s phone related revenue have decreased by $525 million in 2019. Microsoft also incurred $630 million of asset impairment charges related to their Phone business and $480 million of restructuring charges for their phone business.

Even though Microsoft did not fare well in the phone and mobile device business, they have announced two new smartphone, Surface Duo and Surface Neo in 2019. What makes this point interesting is the fact that this is Microsoft first attempt at creating a new line of smartphone ever since the discontinuation of new windows phone. Since Microsoft does not have a good track record in the smartphone business, it would be interesting to see how Microsoft is planning to create these new products. Microsoft should be careful in their attempt to enter into this business again considering how they did in the past where they incurred financial losses in this business segment. Microsoft should revisit their older smartphone models to identify what when wrong and how they can improve it with their technology innovation capabilities.

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