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**ANL201**

**Data Visualisation for Business**

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**Question 1(a)**

A business organisation’s mission statement displays the generic strategic method to evolve the business and achieve the corporate vision. Microsoft’s mission statement is “to empower every person and every organisation on the planet to achieve more.” (Microsoft, 2019). This mission statement illustrates how empowerment of individuals and businesses can be accomplished through the utility of Microsoft’s computing products.

Microsoft’s mission consists of three components. The first component demonstrates what Microsoft’s products can do to assist customers. For instance, Microsoft’s products help to accelerate data processing in offices and strengthen information access in homes and offices. The second component defines the target market, which includes all individuals and businesses globally in this case. The last component indicates that its software products and computer technology help customers to advance in terms of accomplishing more and exceeding expectations.

**Question 1(b)**

In my opinion, Microsoft’s vision for 2020 is to assist individuals and organisations in the entire world realise their full potential without being dependent on Microsoft. The Shareholder Letter places a large emphasis on ensuring Microsoft’s technology innovations invariably benefit everyone globally and allow them to accomplish more.

The Shareholder Letter demonstrates that Microsoft products assist small businesses boost productivity, increase competitiveness in multinationals, heighten efficiency and effectiveness in governments and non-profits respectively. One example is a family-owned restaurant located in the seaside city of Ise, Japan, predicts sales for the purpose of improving its menu and to satisfy patrons’ tastes and expectations with the help of software Azure ML and Power BI. Another example is Ford Motor Co. employing GitHub as its software development platform to manufacture the cars of the future and resulted in employees capable of creating at a rapid pace and gain opportunities to work together with an extensive ecosystem of third-party software developers globally. Healthcare and education prove to have better outcomes. One example is that a senior lecturer at UNSW Sydney uses Microsoft 365 and shown great results in promoting students to have enjoyable and engaging learning sessions no matter where the students are located. Another example is that Phulukisa Health Solutions uses Azure-powered backpack to provide basic healthcare screening to address critical and preventable health problems such as diabetes, heart disease, and tuberculosis.

The Shareholder Letter states that every organisation is a technology organisation at present. To be able to evolve and increase competitiveness, adopting leading software and services are insufficient. Companies are required to enhance their own digital proficiency. Leading companies in almost all countries partner with Microsoft to establish the technology required in a time of unprecedented change to remain competitive and innovative.

In conclusion, Microsoft innovates technology and products to empower individuals and organisations to be able to advance further. Microsoft works alongside customers and partners to enhance their digital proficiency but at the same time wishes them to be independent with Microsoft instead of being dependent on Microsoft. Therefore, in my opinion, Microsoft’s vision for 2020 is to assist individuals and organisations in the entire world realise their full potential without being dependent on Microsoft.

**Question 1(c)**

Microsoft’s strategic themes are technological breakthroughs and progress, trust, environmental and corporate social responsibility, and culture.

Microsoft’s first strategic theme is technological breakthroughs and progress. At the present stage, intelligent cloud and intelligent edge embodies the next step of innovation. Investing in vast and developing markets as well as innovating to empower their clients aids them to move towards digitalisation. The main focuses are applications and infrastructure, data and artificial intelligence (AI), business applications, modern workplace and gaming. For instance, Microsoft is investing to assemble the most exhaustive toolchain for developers for code-editing as well as building Azure for answering clients’ real-world operational sovereignty and obligatory demands. Since quintessential aspect for evolution of every application will be AI, it is essential to adjust AI framework, mechanisms, and services so that developers are able to observe, listen, respond, interpret, mentally analyse, and more into their applications. Companies can generate digital feedback loops that obtain data from one system and employs it to amend the results of another with the use of Dynamics 365 software. New breakthrough game streaming technology helps to revolutionise how games are distributed, played, and perceived.

Microsoft’s second strategic theme is trust. Microsoft states that there will be no progress made without earning and sustaining the trust of individual and business clients as well as the communities. It is vital to ensure that users of their products and services have assurance in

the underlying technology itself and three pillars are used in evaluating that, namely privacy, cybersecurity, and responsible AI. All products and services are formulated with privacy in design that delineate clear privacy standards to provide purposeful privacy options and to administer consistently and be accountable for the data being stored and processed. Customers are guarded from malware and phishing by providing end-to-end security and partnership with the public sector and tech sector enables Microsoft to handle new threats in a progressively complicated and heterogenous world. Constructing AI responsibly helps to handle society’s most compelling questions but also considering and defending against inadvertent consequences of AI.

Microsoft’s next strategic theme is environmental and corporate social responsibility. The purpose is “to foster a sustainable future where everyone has access to the benefits and opportunities created by technology.” (Microsoft, 2019). Microsoft’s efforts to move towards low-carbon future include running carbon neutral across global operations, coordinating carbon-reduction efforts with most recent climate science and cooperates with clients to curtail clients’ ecological footprints and devise resolutions for a more sustainable planet through the use of technology. To grow and succeed in a digital economy, broadband access is necessary. Microsoft Airband Initiative granted access to broadband for people in rural areas in efforts to remove the US rural broadband gap as well as to narrow the global digital divide.

Microsoft’s last strategic theme is culture. Microsoft treats their employees as talents, and it is crucial to cultivate their employees because the employees are the ones empowering the clients and gaining their trust. Thus, the emotional, physical, and financial well-being of employees and their families are taken care of and prioritised by granting industry-leading benefits and paid leaves of absence for an assortment of life circumstances. Reinforcing the link between employees’ attitude towards diversity and inclusion and their growth mentality culture narrows the disparity between the espoused culture and the lived experience. “Culture transformation is a continuous process of learning, renewal, and having the everyday courage to confront our own fixed mindsets, while remaining true to our enduring values of respect, integrity, and accountability.” (Microsoft, 2019).

**Question 1(d)**

The four stages of data visualisation process are data collection and storage, data pre-processing, graphics engine and human visual and cognitive processing.

The first challenge that may be faced by Microsoft is the collection and storage of data of its individual users without their consent and understanding. Privacy Company on behalf of the Dutch Ministry of Security and Justice created a Data Protection Impact Assessment (DPIA) to assess Microsoft’s process of collecting and storing data of its users. Shockingly, results showed that personal data about the behaviour of every employee were collected and stored extensively with the absence of general documentation. The data stream is encoded which restricted Microsoft to provide options such as the ability to look through what data were collected, amount of data collected and feasibility to turn off the collection of data. This can result in companies and individuals to revoke their trust with Microsoft and find alternatives to store their data as Microsoft cloud programs such as SharePoint, OneDrive and web-only version of Office 365 are considered to have high data protection risks according to the Privacy Company.

The second challenge that may be faced by Microsoft is oversimplification of data. Microsoft software have the capability of taking large swaths of real data and then convert them into understandable and simplistic terms, which is also a huge disadvantage for data visualisation because oversimplification of data tends to occur especially for larger datasets. The consequences of compiling substantial amount of data points and limit their results to a few pictorial descriptions would be misleading conclusions or disregarding various important modifiers completely that leads to an entirely different set of assumptions being made.

The next challenge that may be faced by Microsoft is vulnerability of Graphics Rendering Engine failing to handle Windows Metafile (WMF) images properly. The approach that the Graphics Rendering Engine included with a few versions of Microsoft Windows manages WMF image files resulted in the existence of an undefined vulnerability. The attacker would create a specially devised a WMF image file and distributes it online or in an email message. When a user opened this specially devised WMF file, the attacker might be allowed to enact arbitrary code on a vulnerable system.

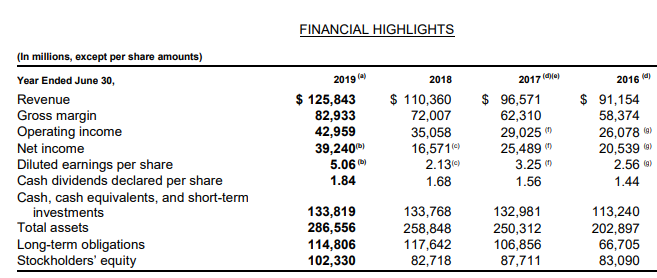
The last challenge that may be faced by Microsoft is the human limitation of algorithms. It is the most complex and immense issue because algorithms that are used to scale down data to visual illustrations depend on human inputs which can be basically erroneous. The issue is exacerbated by the fact that almost all data visualisation systems develop into one-size-fits-all algorithms as they are established on a national scale. Therefore, it falls short on evaluating and answering the specific demands of individuals. In addition, over-reliance on data visualisations can add on to the limitations of human mistakes in algorithm development.

**Question 1(e)**

The first interesting point from Microsoft’s 2019 Annual Report is culture transformation. According to the Shareholder Letter, number of women corporate vice presidents rose by 152% and number of African American/Black and Hispanic/Latinx employees in nonretail roles rose by 54% since fiscal 2016. And this past fiscal year, more than half of the U.S.-based interns were women, African American/Black, or Hispanic/Latinx. (Microsoft 2019).

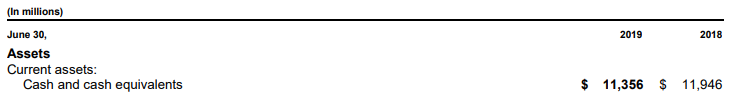
Microsoft has placed high emphasis on growth mindset as well as workplace diversification and inclusion. Culture transformation in Microsoft is interesting because with a growth mindset, all employees are regarded to have potential to grow and succeed and are remunerated for improvement. Most companies basically have two options which is to either acclimate and comply or disintegrate. When faced with failure, management usually blame the team and demoralise the team, showing dissatisfaction over wasted resources and time. However, Microsoft’s approach is that the management should promote failure because it is part of the journey towards transformation. This grants employees opportunities to explore, create and transform so new ideas and solutions will emerge. Moreover, employees are recognised for taking risks and experimenting new innovations, acknowledging failures and learning from failures, and improving their skillsets instead of just remunerating them for extraordinary achievements. In this way, there will be substantial rise in employee participation, resilience, and motivation.

Microsoft sees diversification and inclusion as a main priority in business development because it allows better communication and service to diverse clients and meet their unarticulated demands. More diverse employee base enables more diverse innovations and unity among employees, maximising human resource capabilities. The financial highlights shown below displays increase in revenue, gross margin, and operating income from 2016 to 2019 which proves the effectiveness of culture transformation in Microsoft.

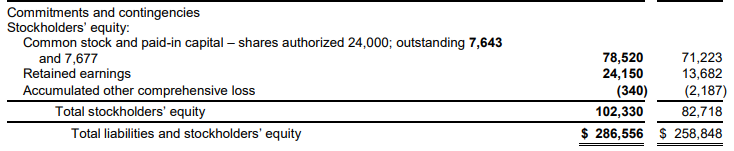


Microsoft’s Culture transformation is advantageous for the company because reinforced business targets and lasting global success. Growth mindset as well as diversification and inclusion increase success level due to more diverse innovations and better responsiveness to issues that clients are facing. This aligns with Microsoft’s mission statement which is “to empower every person and every organisation on the planet to achieve more.” (Microsoft, 2019). The disadvantage of Microsoft’s culture transformation is deficiency of regularised support for sufficient autonomy. Recommendation for Microsoft includes incorporating sizable autonomy in its organisational culture.

The second interesting point from Microsoft’s 2019 Annual Report is the large difference in diluted earnings per share and the cash dividends declared per share in 2019. In the table on financial highlights, diluted earnings per share and cash dividends declared per share in 2019 were $5.06 million and $1.84 million respectively. This is a 175% difference in 2019 compared to a 27% difference in 2018 where diluted earnings per share and cash dividends declared per share are $2.13 million and $1.68 million respectively. This is surprising given that retained earnings is almost double in 2019 than in 2018 ($24,150 million vs $13,682 million) and that cash flows for both years are similar at $11,000 million.







It may be bad for the company because it is not transparent to stockholders as of why there is such big difference in the earnings per share and cash dividends declared per share. Fortunately, as the cash dividends declared per share increases constantly throughout from 2016 to 2019, likelihood of stockholders continuing to invest and attracting new investors to invest in Microsoft is high.

Recommendation for Microsoft would be to explain in detail the stockholders of what constitutes the large difference in earnings per share and cash dividends declared per share since earnings per share is also calculated based on common stock and common stock equivalents. Another recommendation would be to provide table of contents in the Annual Report so that stockholders or other users of the financial statements can navigate through the key financial statements they require easier.

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