Name: Justin Grima

Student Number: 14248599

Course ID: MA5840 Data Science and Strategic Decision Making for Business

Assessment: The use of AGI in Strategic Decision Making in Organizations – Literature review

Due Date: 11:59 PM AEST Sunday of Week 6 (20/08/2023)

Word Count: 2, 200 (2, 000 +/- 10%) not including headers, sub-headers, and image and table descriptions.

I. Introduction

The development of Artificial General Intelligence (AGI) is one of the most ambitious goals in computer science with its potential ability to comprehend and master any intellectual task like humans. Its implementation would enable a revolutionary change in industries, organizational dynamics, and workforce operations. (Moreira, F. 2023). With the tech leaders, like Google and DeepMind, or Elon Musk and OpenAI at the forefront of AGI research and development (Moreira, F. 2023), AGI incorporation into our everyday life is inevitable. This will present the public and organizations with the responsibility to thoroughly comprehend AGI, enabling full utilization of its capabilities.

This report conducts a complete examination of relevant literature sources: peer-reviewed articles, online discussions, interviews, authoritative websites, and professional papers, to identify and discuss the strengths, weaknesses, opportunities, and threats (SWOT) of using AGI in strategic decision-making. This entails comparing ideas, from various sources, to build a well-organized narrative depicting the diverse aspects of AGI and its impact on the intricacies of organizational dynamics and strategic decision-making, and its significance in data science. Furthermore, this report will explore the relationship between AGI and its impact on the future roles of data scientists: delving into the potential challenges, trends, perceptions, and responsibilities that define this evolving landscape.

By analyzing the literature, a well-rounded perspective that addresses the complex implications of AGI on the strategic decision-making processes within organizations is presented. Through critical analysis and summarisation, the aim is to provide a balanced evaluation that involves the many elements of this transformative trend. Additionally, a breakdown of AGI's understanding, trends, impacts, and their alignment with the role of the data scientist is conducted, to provide a comprehensive investigation that deepens our understanding of this paradigm-shifting phenomenon, AGI.

II. Literature Review

Let us start by establishing a comprehension of AGI and distinguishing it from the more commonly known term, Artificial Intelligence (AI): a prevailing technology employed globally in various domains. AGI is a subset of artificial intelligence, with the intellectual ability to understand, learn, and apply its knowledge to perform a variety of tasks that humans can do (Moreira, F. 2023). Originally the central objective within the AI field, AGI is acknowledged as the major goal in technology. However, with the intricate challenges associated with AGI development, the focus has leaned more toward narrower, immediately applicable AI technologies that excel in specific tasks (Baum, 2017). However, there remains a dedication towards research and development (R&D) of AGI, and although theoretical at this stage, ongoing advancements in development suggest a transition from concept to reality very soon. To illustrate the comparison, consider the AI DeepBlue who beat Kasparov in chess: an example of a narrow AI excelling in one task yet lacking versatility to compete in other tasks, a trait inherent in AGI (Baum, 2017). Table 1 presents a comparison between AI and AGI. Moving forward in this report, we focus on discussing AGI in organizations for strategic decision-making: a process aligning businesses' short-term decisions with their long-term vision and direction.

Feature	Artificial Intelligence (AI)	Artificial General Intelligence (AGI)
Ability	Usually centered around addressing particular issues.	Designed with the capability to undertake a variety of cognitive tasks.
Interaction with the world	Generally, interacts with the environment using a limited array of interfaces.	Engineered to engage with the world in a way that closely resembles human interaction.
Intelligence	Typically, much less intelligent.	Intended to possess human-level intelligence.
Learning and adapting capabilities	Overall, usually requires human involvement for learning and adaptation.	Devised to be able to learn and adapt on its own.

Table 1: A comparison of Artificial Intelligence (AI) and Artificial General Intelligence (AGI).

With any new technological advances that progress from a theoretical concept to becoming a reality, a variety of professional opinions provide an open dialogue for expressing viewpoints, fostering debates, and refining our collective understanding of the implications and potential outcomes through published literature. By thoroughly analyzing multiple online literatures, we can effectively identify common underlying motivations and integrity issues associated with incorporating AGI into strategic decision-making, along with its significant relevance to the field of data science.

Given the achievements of narrow AI in enhancing outcomes and accomplishing tasks with greater efficiency, the concept of an enhanced AGI that can exceed specific tasks to deliver services across diverse domains emerges as a transformative factor, with several motivations for its implementation to strategic decision-making. The following are the main motivational factors (MF) for implementing AGI into strategic decision-making compiled from multiple literature sources.

MF1: Increased speed and efficiency. AGI can accelerate decision-making processes by automating tasks, identifying patterns, and assisting in making predictions. This results in saving time and costs through automating current manual tasks, while also freeing employees to concentrate more on broader, intricate strategic, and creative work [(Karkera, S. 2023), (Moreira, F. 2023), (Korovilas, P. 2023), (Lutkevich, B. 2022)]. The significance of MF1 in data science rests in data scientists' common challenge of handling extensive, intricate datasets. AGI implementation for automation can free up time, enabling focus on innovative tasks like developing advanced machine-learning algorithms for intricate problem-solving.

MF2: Improved decision-making. AGI implementation enhances organizational strategic decision-making as its capabilities offer deeper insights into large complex datasets, uncovering intricate patterns that could prove challenging or even beyond human ability. This would improve risk and opportunity detection, enhance predictive accuracy, and efficient resource allocation. [(Karkera, S. 2023), (Khare, Y. 2023), (Carlson, 2019), (Frąckiewicz, 2023)]. MF2's significance to data science lies in AGI's capacity to enhance data comprehension. As previously noted, AGI demonstrates expertise in analyzing intricate data patterns and trends—tasks that might pose difficulty or impossibility for humans to achieve.

Therefore, AGIs' capability would enhance ML algorithms and reinforce confidence in recommendations for strategic decision-making.

MF3: More creative and innovative solutions: AGI empowers organizations to create innovative solutions by exploring vast new possibilities due to its greater capacity for data analysis, compared to humans. AGI can generate new, superior ideas from its vast knowledge, detecting previously elusive patterns. Integrating AGI into strategic decision-making propels organizations ahead, by coming up with new products, services, and business models, sustaining a competitive edge [(Moreira, F. 2023), (Khare, Y. 2023), (Kathiarayan, V. 2023)]. MF3's significance to data science exists in AGI's abilities to help data scientists towards innovative problem-solving. AGI's extensive knowledge surpasses humans and can assist in idea processing by providing supporting data and suggesting effective alternative ideas for optimal, more profitable solutions.

MF4: Reduced risk: AGI can help organizations in risk improvement by early identification of issues like data quality, security, and compliance, along with financial, operational, and reputation risks. From this, organizations can be prepared for unexpected events, ensuring preparedness for unforeseen events, and preventing expensive errors. [(Moreira, F. 2023), (Korovilas, P. 2023), (Everitt, 2018), (Carlson, 2019)]. MF4's significance to data science resides in AGI's potential to reduce risk and prevent costly errors for organizations. Data scientists frequently engage in risk identification and mitigation, for which AGI can be an asset. This encompasses finding and resolving security threats, reputation and financial risks, operational challenges, equipment malfunctions, supply chain interruptions, and addressing potential data quality issues like missing, inaccurate, or inconsistent data.

Alongside motivating factors, there exist issues (I) surrounding any topic under analysis and discussion. The following content outlines the primary issues identified from the collection of literature regarding AGI's integration into strategic decision-making, and its significance to data science.

I1: Data bias and ethical implications. If the data used to train the AGI system carries bias and unethical elements, the system reflects them. The outcomes of such a biased and unethical system might result in faulty decision-making and unjust treatment of specific demographic groups. Hence the importance of carefully considering the ethical implications of using AGI and taking steps to mitigate the risks of bias [(Baum, S. 2017), (Rayhan, S. 2023), (Chakraborty, 2023), (Carlson, 2019)]. The significance of I1 in data science comes from data scientists supplying training data for the AGI system. This stresses the importance of analyzing data types to prevent AGI training on biased or unethical data.

I2: Lack of transparency. The intricacies of AGI processes introduce the 'black box' concept, where system complexities are hidden, hindering understanding of its decision processes. As a result, trusting the system becomes an issue: ensuring AGI decisions align with the interests of the organization [(Baum, S. 2017), (Khare, Y. 2023), (Rayhan, S. 2023), (Carlson, 2019)]. The significance of I2 to data science stems from data scientists' need to comprehend AGIs' decision-making process to identify and correct possible issues. The absence of transparency makes it challenging to determine the fairness of decisions.

I3: Job displacement and change of responsibilities. AGI systems might displace certain human roles, like analysts and data-related positions, and those involved in decision-making: changes in board composition with more AGI-aware technical staff. Moreover, integrating and overseeing AGI brings added tasks for select employees. Overall, AGI implementation can lead to unemployment, social unrest, and frustrated employees [(Baum, S. 2017), (Moreira, F. 2023), (Khare, Y. 2023), (Dewalt, 2023)]. I3 significance in data science is rooted in expanded duties for data scientists: developing, deploying, and managing these systems, which is beneficial to the organization. Furthermore, data scientists could assume a role on the board to steer AGI adoption without compromising core values and principles.

I4: Cybersecurity risks and legality. AGI systems, storing extensive confidential data, are susceptible to cyberattacks, potentially causing security breaches that could be detrimental to an organization. Additionally, legal concerns may emerge, particularly regarding privacy and discrimination in AGI-driven strategic decisions. Thus, a thorough assessment of cybersecurity risks and legal consequences is necessary before AGI implementation in decision-making [(Baum, S. 2017), (Rayhan, S. 2023), (Carlson, 2019), (Kathiarayan, V. 2023)]. I4 is significant in data science as data scientists manage data collection, cleaning, analysis, and AGI algorithm development. They are responsible for identifying and addressing these risks, ensuring safe and ethical AGI system utilization.

Figure 1 depicts a summary of the motivational factors and issues discussed above using the strengths, weaknesses, opportunities, and threats (SWOT) framework of using AGI in strategic decision-making.

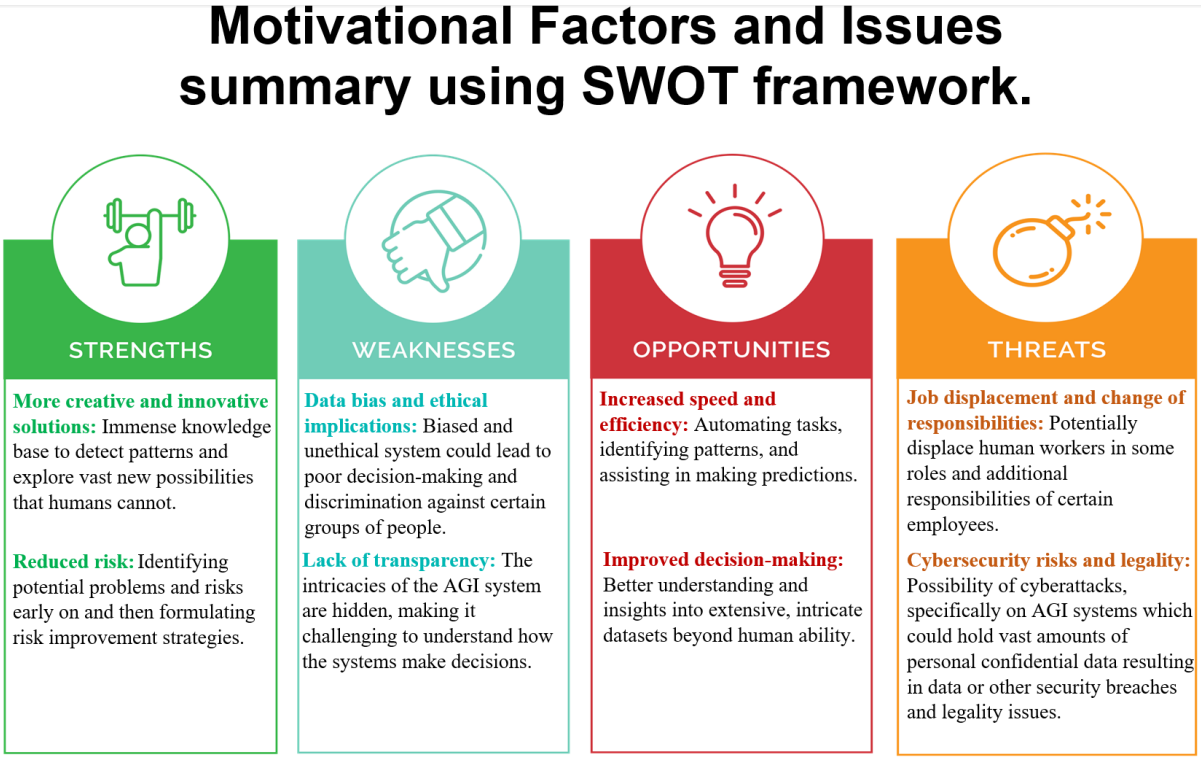

Figure 1: Summary of motivational factors and issues using the SWOT framework. *Note.* Template sourced from TemplateLab (2020).

As a data scientist, I am naturally interested in how advanced technology, like AGI, will impact my profession. From my analysis of multiple sources, the following discusses my

opinion on the positive impacts (PI) and challenges (C) that AGI in strategic decision-making might have on the role of data scientists.

PI1/ C1: New responsibilities. Through integration into strategic decisions, AGI will provide board members with extensive data, excellent insights, and predictive capabilities. This will prompt a transition toward more data-driven decision-making, requiring a board composition shift towards members with greater expertise in technology (Moreira, F. 2023), like data scientists. Additionally, data scientists would partake in developing, deploying, and managing AGIs as added new responsibilities. This could lead to greater demand for data scientists, creating new opportunities with increased salaries and improved career outlooks. However, this implies the need for data scientists to improve their expertise to comprehend AGI intricacies, and complex datasets and utilize advanced machine learning algorithms for predictions. Failure to keep up with developing technologies could be detrimental to their career.

PI2: Automate tasks. AGI can automate tedious data analysis tasks like data collection, cleaning, and feature engineering (Frąckiewicz, 2023) for strategic decision-making, freeing up data scientists to redirect their efforts towards innovative, complex pursuits, such as developing new machine-learning algorithms for intricate problem-solving.

PI3: Building better models. AGI's ability to analyze vast, complex datasets, to identify insightful patterns beyond human capabilities will empower data scientists. AGIs' insights can lead to significantly enhanced and more robust models, yielding better predictions and boosting strategic decision-making.

C2: Ethical Concerns. Given data scientists' understanding of machine learning, artificial intelligence, dataset handling, and intricate algorithm development, their responsibilities expand to developing and managing AGI within organizations. Data scientists are then challenged with identifying and resolving issues related to bias, fairness, transparency, and accountability. This ensures that AGI algorithms are designed and trained to avoid enabling existing social biases and stereotypes (Rayhan, S 2023) through carefully selected and thoroughly examined data.

C3: Security and Privacy. With AGI systems gathering and processing extensive data, they become susceptible to cyberattacks and unauthorized access, jeopardizing sensitive data and decision-making processes. Data scientists must ensure robust security measures. Additionally, by collecting data on individuals' actions and behaviors, data scientists face the task of ensuring AGI system utilization respects individuals' privacy.

III. Conclusion

The creation of AGI stands as a monumental objective in computer science, with its potential ability to comprehend and master any intellectual task like humans. Its implementation would enable a revolutionary change in industries, organizational dynamics, and workforce operations. This report extensively analyzed literature to investigate, identify, and discuss the strengths, weaknesses, opportunities, and threats (SWOT) of using AGI in strategic decision-making. As a result, we identified and summarised, several motivation factors (strengths and opportunities) into key points: increased speed and efficiency,

improved decision-making, more creative and innovative solutions, and reduced risk. Additionally, we pinpointed issues (weaknesses and threats): data bias and ethical implications, lack of transparency, job displacement and change of responsibilities, and cybersecurity risks and legality, associated with AGI's role in strategic decision-making and its significance to data science.

Furthermore, through analyzing literature and integrating varied perspectives, we articulated our opinion, examining the positive impacts and challenges—such as new responsibilities, automated tasks, building better models, ethical concerns, and security and privacy—stemming from AGI integration in strategic decision-making, and its impact on the role of data scientists. Although the timeline is uncertain, AGI's incorporation into daily life and organizational operations, particularly in strategic decision-making, is an inevitable and complex task, demanding substantial insights and comprehensive guidelines to ensure smooth integration. Currently, certain domains lack adequate research to offer such insights, including the integration of AGI into current decision-making frameworks, ethical AGI usage in strategic decisions, and preparing individuals for AGI-involved decision-making. With AGI and its endless potential soon becoming a reality, the question remains: Are we prepared?

IV. References

Baum, S. (2017, November 12). *A Survey of Artificial General Intelligence Projects for Ethics, Risk, and Policy*. Papers.ssrn.com. Retrieved August 13, 2023, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3070741

Carlson, K. W. (2019). *Safe Artificial General Intelligence via Distributed Ledger Technology*. Big Data and Cognitive Computing, *3*(3), 40. Retrieved August 15, 2023, from https://doi.org/10.3390/bdcc3030040

Chakraborty, S. (2023, July 8). *Everything To Know About Artificial General Intelligence*. Analytics Insight. Retrieved August 15, 2023, from https://www.analyticsinsight.net/everything-to-know-about-artificial-general-intelligence/#:~:text=AGI%20refers%20to%20the%20development

Cichocki, A., & Kuleshov, A. P. (2021). Future Trends for Human-AI Collaboration: A Comprehensive Taxonomy of AI/AGI Using Multiple Intelligences and Learning

Styles. *Computational Intelligence and Neuroscience*, *2021*, 1–21. Retrieved August 15, 2023, from https://doi.org/10.1155/2021/8893795

Dewalt, K. (2023, May 4). *The Era of Enterprise Artificial General Intelligence has Begun*. FeedForward by Prolego. Retrieved August 15, 2023, from https://medium.com/the-business-of-ai/the-era-of-enterprise-artificial-general-intelligence-has-begun-1105e5942696

Everitt, T. (2018). *Towards Safe Artificial General Intelligence*. TomEveritt.se Retrieved August 15, 2023, from https://www.tomeveritt.se/papers/2018-thesis.pdf

Frąckiewicz, M. (2023, April 18). *The Ethical and Social Implications of AGI*. TS2 SPACE. Retrieved August 14, 2023, from https://ts2.space/en/the-ethical-and-social-implications-of-agi/

Karkera, S. (2023, April 26). *16 ways how AGI will revolutionize the Customer Success profession.* Www.linkedin.com. Retrieved August 14, 2023, from https://www.linkedin.com/pulse/how-agi-revolutionize-customer-success-profession-saahil-karkera/

Kathiarayan, V. (May, 2023). *The Role of Artificial Intelligence in Strategic Decision-Making Opportunities, Challenges, and Implications for Managers in the Digital Age* ResearchGate. Retrieved August 14, 2023, from https://www.researchgate.net/publication/370869247_The_Role_of_Artificial_Intelligence_in_Strategic_Decision-Making_Opportunities_Challenges_and_Implications_for_Managers_in_the_Digital_Age

Khare, Y. (2023, April 15). *OpenAI Co-Founder & Chief Data Scientist On the Potential of AGI*. Analytics Vidhya. Retrieved August 16, 2023, from https://www.analyticsvidhya.com/blog/2023/04/openai-co-founder-chief-data-scientist-on-the-potential-of-agi/

Khare, Y. (2023, April 27). *Artificial General Intelligence: Definition, Scope, and ChatGPT as an Early AGI*. Analytics Vidhya. Retrieved August 16, 2023, from https://www.analyticsvidhya.com/blog/2023/04/artificial-general-intelligence-definition-scope-and-chatgpt-as-an-early-agi/

Korovilas, P. (2023, August 4). *Embracing AGI: The Next Frontier in Leadership Decision-Making*. Medium. Retrieved August 12, 2023, from https://medium.com/@xveritasaequitas/embracing-agi-the-next-frontier-in-leadership-decision-making-4ece85f06fcc

Lutkevich, B. (2022, April). *What is artificial general intelligence (AGI)? - Definition from WhatIs.com*. SearchEnterpriseAI. Retrieved August 16, 2023, from https://www.techtarget.com/searchenterpriseai/definition/artificial-general-intelligence-AGI

Moreira, F. (2023, April 10). *Adapting to the AGI Frontier: Ethical and Strategic Approaches for Board Members in the Age of Artificial General Intelligence*.. Www.linkedin.com. Retrieved August 14, 2023, from https://www.linkedin.com/pulse/adapting-agi-frontier-ethical-strategic-approaches-board-moreira/

Rayhan, S. (2023, July). *Ethical Implications of Creating AGI: Impact on Human Society, Privacy, and Power Dynamics*. ResearchGate. Retrieved August 15, 2023, from

https://www.researchgate.net/publication/372752216_Ethical_Implications_of_Creating_AGI_Impact_on_Human_Society_Privacy_and_Power_Dynamics

TemplateLab. (2020, April 9). *40 Powerful SWOT Analysis Templates & Examples*. TemplateLab. Retrieved August 17, 2023, from https://templatelab.com/swot-analysis-templates/