Complexity in emerging technologies

Student name.

Institution Name.

Course-name.

Complexity in emerging technologies

**Introduction**

The need for change in organizations has enacted the passive use of technology to ensure organizational goals are met within the scheduled time. For instance, in the automotive business, technology has completely changed the production process through the use of artificial intelligence. Humans only interact with the machines in the final stages, where fitting gadgets that machines cannot initiate is required. On the other hand, the use of google enabled services has completely changed the way people operate because of the introduction of the internet of things. For instance, people can easily monitor operations in their homes and offices from a remote location. Cars can also be driven with steering-enabled devices that control the movement direction of the car. Complexity in the computer system has its origin from the ever-changing individual or organization demands. The systems must be designed to accommodate the changes; hence there are uncertainties of what might be needed every time change is needed. The new system must portray a high level of connectivity and adaptivity, which are always accompanied by internal and external barriers.

**Complexity in sociotechnical systems**

The aspect of sociotechnical systems is depicted by data mining and big data analysis in an organization. According to Idrees, Alam, & Agarwal, (2019), big data analysis enables the manager to understand the customer purchase patterns and make decisions based on available data. On the other hand, data mining provided the information that facilitates the process of big data analysis. The two technologies have widely been used in organizations to help managers attain competitive advantages. For instance, big data analysis helps an organization to determine whether there are potential customers in a certain market to avoid committing capital in an investment without a potential return on investment. To reduce the burden of digitization when using data mining and big data analysis, the organization should implement the use of cloud computing. Cloud computing refers to the use of a remote storage location that can be accessed through the internet (Tadapaneni, 2018). Cloud computing offers large storage space and reduces the cost of purchasing on-site servers prone to catastrophic occurrences and human manipulation. Organizations target to increase the rate of returns, and cloud computing offers the best strategy to eliminate additional costs because it offers large storage space. It also offers product as a service and software as a service which improves the efficiency of collection and analysis of big data in an organization.

There should also be operational levels to handle the complex data and turn it into useful information. For instance, once the data is collected, it should be grouped into levels to generate useful analytics. Consequently, failure to group the data can result in redundancy and create a deadlock of operations. An organization will spend a lot of capital solving a problem that can easily be handled with operational levels. Therefore, there should be a phase management structure to identify and evaluate the systems before the changes were made, during the change period, and after the change has been made. According to Zalisky et al, (2018), there should also be a scheme to monitor the rate at which the complex systems are changing. Monitoring change can generate co-efficient in tracing the change patterns and facilitate the process of managing the complex systems.

The implementation and use of the internet in the learning process have also be attributed as one of the complex systems because of the many existing layers that facilitate the process. According to Lee, Lee, & Kim, (2018), to make the whole process simple and faster, the systems should have a user-friendly graphical user interface to enable fast and efficient use by learners. System operation ability depends on the lines of code and the programing language used (Holmes et al 2020). Programmers should ensure they develop light weigh programs that can run on computers and mobile phones with low storage space. The systems should also be upgraded periodically to eliminate the instances of hacking that are initiated by Trojans installed in the computer.

**Information system solutions in an organization that target competitive advantages.**

Organization competes to outdo each other in the market and gain a large market base of loyal customers. They, therefore, implement complex systems that use artificial intelligence to handle complex tasks. To ensure there is uniformity of operations and excellence achievement of targets, organizations should periodically run checks and update the system to the latest versions. The system is also at risk of either internal or external attacks. To eliminate internal attacks, there should be a password policy to ensure the verified users only access systems. There should also be a powerful firewall policy to ensure data packets are only sent and received from secure domains.

**Conclusion**

The complexity of systems depends on the organization and the nature of use. For instance, in the business sector, organizations require high-performance systems that can identify and develop correlation patterns between data. However, the information systems are associated with negativities like hacking and eavesdropping, which put the organization at a higher risk of closure. The systems are also expensive to acquire and maintain, making them a liability to the organization. However, with the implementation and use of cloud computing, organizations can eliminate the higher costs and run effectively without problems.

References

Holmes, J., Ahmed, I., Brindescu, C., Gopinath, R., Zhang, H., & Groce, A. (2020). Using relative lines of code to guide automated test generation for Python. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, *29*(4), 1-38.

Lee, S., Lee, J. H., & Kim, J. (2018). User-friendly graphical user interface software for ideal adsorbed solution theory calculations. *Korean Journal of Chemical Engineering*, *35*(1), 214-221.

Tadapaneni, N. R. (2018). Cloud Computing: Opportunities And Challenges. *Available at SSRN 3563342*.

Idrees, S. M., Alam, M. A., & Agarwal, P. (2019). A study of big data and its challenges. *International Journal of Information Technology*, *11*(4), 841-846.

Zalisky, M., Odarchenko, R., Gnatyuk, S., Petrova, Y., & Chaplits, A. (2018). Method of Traffic Monitoring for DDoS Attacks Detection in e-Health Systems and Networks. In *IDDM* (pp. 193-204).