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Big data management has risen as a significant area of concern for organizations across various sectors, thanks to the potential risks and threats which are associated with handling massive amounts of data. The rapid growth of big data technologies has allowed for an increase in data security concerns which resulted in making it essential to understand the main factors that have contributed to this rise and the role of technology, personnel and processes in ensuring secure big data management.

The rising availability of large amounts of data, progression in data processing and storage technologies along with the increasing need for business insights and decision-making have contributed to the emergence of big data technologies. The expansion of social media, IoT devices and cloud computing has also allowed for a rapid growth in data generation which makes it a necessity to invent new technologies to help manage and process large amounts of data.

The need for live analytics and business knowledge has also excelled the growth of big data technologies. Organizations are now able to collect and scan huge amounts of data from multiple origins which includes social media, IoT devices and a customer's bank transactions. This has allowed them to make accurate data driven decisions, identify new business opportunities and improve customer satisfaction.

Technology plays a crucial role to ensure secure and proper big data management. The usage of advanced encryption methods, access controls and secure storage solutions can aid to protect very sensitive data from unwanted access. For example, organizations can use an advanced encryption technique such as AES-256 to encrypt sensitive data, ensuring that it is only accessible to authorized personnel (Bao et al., 2018).

Personnel with the necessary skills and experience are also important in ensuring secure big data management. Data scientists along with analysts have to be trained in big data security and privacy's best practices to ensure that they are handling sensitive data safely. Organizations also need to invest in continuous training and professional development to stay updated with the latest threats and technologies (Bao et al., 2018).

Processes are also a necessity when ensuring secure big data management. Organizations have to develop strong policies and methods for the handling of sensitive data, including data retention, destruction and access controls. For example, organizations can develop policies for data retention periods, which ensures that sensitive data is only kept for as long as needed. Additionally, organizations can create procedures for data destruction, ensuring that highly sensitive data is properly destroyed when it is no longer needed.

The shift towards big data has brought multiple difficulties in terms of data security. The complexity of big data processing and analysis requires a specialized skill set and experience, which can be an obstacle for organizations. Furthermore, the volume and velocity of big data requires advanced storage solutions and infrastructure to ensure secure processing and analysis.

Despite this, the shift towards big data also creates multiple advances. The ability to analyse large amounts of data can provide important insights and business benefits, including improved decision-making, reduced costs and increased customer satisfaction. For example, organizations can use big data analytics to identify new business opportunities, improve customer satisfaction and reduce costs. Furthermore, the constant development of new technologies such as artificial intelligence and machine learning can help improve incident response and identify potential security threats. For example, organizations can use machine learning algorithms to identify anomalies or issues in their network traffic and detect potential security threats.

In conclusion, the security entanglement of big data management is concerning for organizations across various sectors. The rise of big data technologies has been influenced by the rise of availability to large amounts of data, advancements in data processing and storage technologies and the growing need for business insights and decision-making. Technology, personnel and processes play an important role to ensure safe and secure big data management.

While the move towards big data allows for multiple difficulties, it also allows for various prospects for improved decision-making, reduced costs and increased customer satisfaction. Organizations need to invest in technology, personnel development and process improvements to ensure highly secure big data management.

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