



# Influence of Digital Media Storage on Innovation, Competitive Advantage and Business Productivity

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**Abstract :** Advances in the field of technology has enabled individuals and businesses to collect large amounts of data from various sources like social media, user-generated, internet, health care, manufacturing, supply chain, financial institution, and sensors. The process of electronically saving and organizing important files like customer information, order history, invoices, and other confidential documents is called Data storage. Data storage is an essential component of any business in the modern age. It helps companies predict trends, identify opportunities, get customer insights, and stay ahead of the business competition. Data storage options are crucial for keeping the business records safe from unauthorized access and cyberattacks. With so much dependent on digital files, choosing the right data storage system is critical for any business. Businesses not only need data storage to keep important customer information organized and secure, but they must also choose a reliable data storage solution that fits their budget and meets the specific needs of their organization. A standardized data storage system that is safe and ensures swift information retrieval is essential for businesses to stay functional and up to date.

**IndexTerms - digital files, data storage, cyber-attacks, cloud storage.**

## I. INTRODUCTION

Digital technologies have changed the way business-to-business firms act in business markets in terms of what they sell and how they sell it. Digitalization has been identified as one of the major trends changing society and business in the near- and long-term future. The impact of digitalization will be major; it has been compared to the industrial revolution by several authors. The term digitization refers to “the action or process of digitizing; the conversion of analogue data into digital form.” According to literature, digitalization, or digital transformation, refers to “the changes associated with the application of digital technology in all aspects of human society”. Digitalization is also known as the “ability to turn existing products or services into digital variants, and thus offer advantages over tangible product” [1].

There is no industry in the developed countries, which run without ICTs today. However, the level of dependence upon the digital technologies may vary across the countries based on a number of reasons. It is observed that the developed and the developing countries are embracing digital technologies faster, which is reflecting in their economic growth. In 2016, Japan and Brazil had the highest proportion of cloud computing tools i.e. 45%. Similarly, German enterprises showed highest adoption of Electronic Resource Planning (ERP) tools i.e. 57% and the highest acceptance of Customer Relationship Management (CRM) tools i.e. 45%. The same year and following years, there was observed a considerable growth in economy of these countries [6].

Competitive advantage in the digital era is often intricately tied to an organization's ability to swiftly and effectively adopting new technologies. Businesses that outclass in seamless integration of cutting-edge technologies into their business models stand poised to capture market share more rapidly than their competitors. This advantage extends beyond the products or services offered; it encompasses the manner in which businesses operate, including the establishment of more efficient and flexible internal processes. In this context, competitive advantage is not solely a product of innovation but also stems from the transformation of operational paradigms, enabling organizations to navigate the evolving digital landscape with agility and foresight [2].

On the other hand, data-driven marketing optimizes customer information to develop a marketing strategy. It involves using online and offline channels to collect complex data that is then analyzed to understand customers better. The gathered and analyzed data helps marketers understand customers' and purchasing patterns, enabling the marketing team to develop and implement highly-personalized marketing strategies. In the current rapid growth environment, digitalization of the business is essential for raising performance since it enhances the customer experience, decreases costs, and improves the information system, all of which contribute to increased performance [3]. As said, data storage essentially means that files and documents are recorded digitally and saved in a storage system that could be used in future. Storage systems may depend on on electromagnetic, optical or other media to preserve and restore the data if needed. Data storage makes it easy to back up files for safekeeping and quick recovery in the event of an unexpected computing crash or cyberattack. Data storage can occur on physical hard drives, disk drives, USB

drives or virtually in the cloud. The important thing is that the files are backed up and should be easily available if the system gets crashed. Some of the most important factors to consider in terms of data storage are reliability, how robust the security features tend to be and the cost to implement and maintain the infrastructure.

How data storage is going to do to improve your business operations? Technical problems can occur for both small businesses as well as international corporations. Protecting your users' and company's important files and past archive of documents with storage solutions is a vital part of running a business; it will also help to ensure that the files can be recovered if a major loss does occur. Reliability, cost of the storage system and security offerings are the foremost considerations to keep in mind when one prepares to implement data storage.

Here are some key points that explain the concept of digital transformation:

1. **Adoption of Digital Technology:** Digital transformation involves the adoption of digital technologies such as cloud computing, big data, artificial intelligence, the Internet of Things (IoT), data analytics, and various modern applications and software. Organizations typically leverage these technologies to improve business processes, collect and analyse data, and enhance customer services.
2. **Change in Business Processes:** Digital transformation often necessitates a change in traditional business process. Organizations need to revise or even replace old processes with more efficient, automated, and technology-integrated ones. This can involve automating routine tasks, using data analytics for decision-making, or establishing more efficient supply chains.
3. **Customer Experience:** Digital transformation often focuses on enhancing the customer experience. Organizations strive to provide services that are more personalized, fast, and easily accessible through digital platforms like websites, mobile apps, and social media. The use of customer data and behavioral analysis becomes crucial in achieving this goal.
4. **Innovation and Flexibility:** Digital transformation drives innovation in products, services, and business models. Successful organizations in digital transformation are often more flexible in adopting changes and mastering new technologies. They can also collaborate with business partners or external parties to create more innovative solutions.
5. **Security and Privacy:** In the effort to harness digital technology, organizations must also pay attention to data security and customer privacy issues. Data protection and compliance with relevant regulations become essential parts of digital transformation [7].

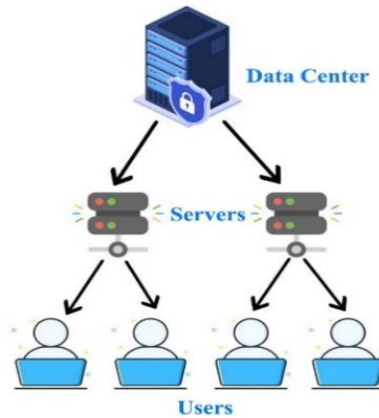
## II. DATA STORAGE OPTIONS FOR BUSINESS

To meet their operational and strategic needs, businesses typically rely on a variety of data sources, such as social media analytics, enterprise resource planning (ERP) software, and customer relationship management (CRM) systems. However, there are frequent issues with data integration, processing speed, and real-time accessibility with these data sources. Businesses should implement advanced enterprise data management practices such as data integration, real-time processing, cloud-based solutions, and data governance due to the additional challenges posed by the constantly evolving regulatory landscape regarding data privacy and security. Many data storage solutions are available today, from traditional hard drives to cloud-based systems. Depending on one's business's specific needs, they can choose the right type of data storage for their company. Each one has a set of pros and cons that make it better for some organizations and not suitable for others [4].

**a. Local Hard Drive:** A local hard drive is installed onto the computer that will store the data in a single location. This is the most common type of storage, and it's suitable for storing documents, pictures, and audio files. Due to size constraints, this type of data storage is best for small businesses. The disadvantage is that, unless you have an optional cloud backup of data, a sudden disaster like an earthquake can totally wipe out all of your data.

**b. Cloud-Based Storage:** Cloud storage is a technology that allows to keep files stored on cloud-based systems. It's housed on cloud infrastructure rather than keeping the data on PC or a local server. There are several benefits in using cloud storage solutions for business. The specific advantages depend on the type of business one run and the data they need to be stored. Some of the advantages of using cloud-based storage are

- *Potential cost savings*
- *Cloud infrastructure offers enhanced security*
- *Convenient access through the cloud*
- *Cloud storage allows for rapid scaling*
- *Cloud storage is ideal for big data analytics*



• Fig 1: Working of Cloud Storage.

Though there are many advantages to using cloud storage systems, there are also potential downsides like.

- Requires an internet connection
- Relying on third parties
- Monthly costs
- Privacy concerns
- Bandwidth limitations

c. **Network Attached Storage (NAS):** NAS is a type of external hard drive which is connected to the internet via router. This data storage system is suitable for businesses with multiple users who need access to files in one central location. It is also ideal for enterprise level users. This is a type of data storage that includes having a large bank of servers at the physical business location. Enterprises with trained IT departments and a large budget often choose this option, as it is ideal for situations where there's a tremendous amount of data to store. Though it is costly, it has the following advantages.

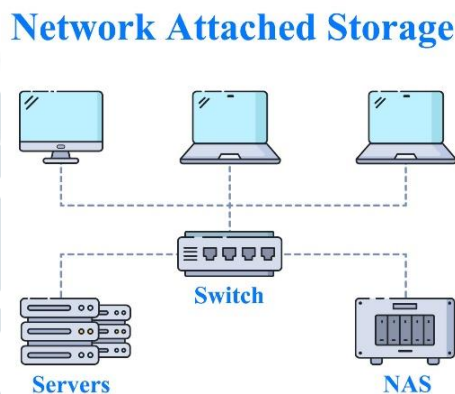


Fig. 2: Example Network Attached Storage.

- Coordination and access are simple as data is in one place.
- Access control and security may be compartmentalized while adding teams from other projects or business units.
- The organization's hierarchy, decision-making processes, and stakeholder needs line up with a centralized data storage approach.
- Low maintenance costs & Data are easily portable.
- Teams can have cross-functional collaboration.
- No recreation of complex logic and computing solution to rebuild the lakehouse or part of it in a different environment.

d. **Virtual Machines:** A virtual machine allows you to store data on a remote server, giving users access to their files from anywhere with an internet connection. This is suitable for businesses that need to collaborate and share large files quickly and securely.

### III. THE IMPORTANCE OF CHOOSING THE RIGHT DATA STORAGE FOR BUSINESS

Having the right data storage type to suit your needs is crucial to your ability to run the business profitably, securely and with easy access for everyone within the organization. With the dependence of digital information growing and more businesses adopting data-driven marketing strategies, the right storage solution is more important than ever. And that's especially true if the company has a large number of files, such as those that track and use customer data as part of their overall marketing strategy [5].

**a. Cost savings & Overall budget**

Data storage enables companies to operate efficiently. But trying to choose the right one for the business sometimes comes down to overall cost savings. For example, it might make sense to use cloud computing if the company has remote employees. However, if the solution the company is considering requires a per user fee and has hundreds of team members, this might not be a right choice. Likewise, having an entire enterprise level server at a small business wouldn't make sense, as it would cost far too much to hire an IT department to maintain.

**b. Data security**

Companies concerned about data and website security need to be particular about the data storage solution they choose. While it might seem counterintuitive to hire a third-party cloud storage company to handle your data storage, the truth is these firms spend a lot of money every year upgrading systems to prevent hacking and breaches. If the company had traditional or server-based data storage at their office location, they would have to continuously update their security protocols to meet the latest threat.

**c. No need to physically move data**

If the company's business is growing, there are more chance they will eventually move to a different office space. For those who utilize on-site data storage or even those old-fashioned filing cabinets, the company will have to pay to move that data to the new location.

**e. Less chance of data loss**

With the right data storage solution, the company's business can greatly reduce the chance of data loss in the event of a catastrophic situation. Likewise, storing data on local laptops or desktop computers isn't always a good idea. Theft, vandalism, or carelessness can cause these items to become damaged or missing easily.

**f. Better efficiency**

If the company has situations where customers need to send in documents, photos or other files, then having the right data storage solution is quite important. Businesses that offer cloud computing uploads through email often experience better customer satisfaction and more of their clients adopt the practice of sending information when needed.

**IV. THE KEY COMPONENTS OF EFFECTIVE DATA STORAGE**

*An organization should consider the following key components before choosing the data storage method.*

- When choosing a data storage solution, a company should make sure to consider the size and security of the system. How much space do you need?
- Does the system come with built-in security features?
- They should also think about the cost of the system and check if it's within their budget. Many cloud-based solutions and virtual machines offer more affordable rates compared to traditional hard drive systems, so be sure to do make research before making a decision.
- Consider how convenient it will be to use the data storage system. Does it provide users with a secure and user-friendly platform?
- Can everyone in the company access their files quickly, regardless of their location?
- When choosing a data storage solution, it's important to think about how it will fit with the other stages of the data lifecycle.
- Some organizations may choose to back up all data, while others may archive inactive data. They might choose to back up that data once an hour, day, or week. The storage strategy will be unique depending on the company.

**a. Enterprises**

Enterprises usually hold data on a much wider customer base, and they usually have the time and budget to develop a more comprehensive view of each contact. A larger database requires more space, complexity, and security while backing up or archiving that data.

One important concern for enterprises when choosing a data storage system is avoiding overexposed data. The 2019 Varonis Global Data Risk Report found that in 53% of companies studied, over 1,000 sensitive files were open to every employee. The best way for enterprises to back up their data is to look for a scalable and secure solution that will support their database size and complexity now and further down the line [6].

**b. Small Businesses**

Regarding small business, they are most likely in need of straightforward data storage solution that fits their budget and enables them to easily back up data from their other cloud apps.

However, being a small business doesn't necessarily mean they have a small amount of data. Small businesses may also have large databases and can even have more disarray than more organized enterprises. Before backing up the data, they should cleanup their database to keep things organized from the start, and can even reduce their storage costs.

The most popular cloud data storage vendors for small businesses are:

- Google Drive
- Dropbox
- Microsoft OneDrive

Both small businesses and enterprises should consider data recovery as part of their backup process. If their database is corrupted or needs to be restored to a previous version for other reasons, there must be a readily available backup that can be implemented quickly and easily.

Considerations for backing up the data include:

- Budget for storage space required
- Frequency of backups
- Integrations with your business
- Security such as two-factor authentication
- Additional offline backups
- Dedicated archives for inactive data
- Individual user access and accounts
- Ease of recovery

## V. CONCLUSION

The digital technology is taking over lives of ordinary men as well as businesses. With the increase in digitalization, the ICT and ICT-enables services sector is expected to keep growing. The economy of countries investing and promoting the digital products and services within their territory is bound to grow directly through ICTs, and indirectly when ICTs support other industries. In conclusion, choosing the right data storage solution is critical to ensuring the business's data is secure, accessible, and scalable. By considering the data storage needs, budget, security, scalability, accessibility, and backup options, one can find the solution that best meets their needs and helps their business succeed. Storing data can seem complex, but the right data storage solution can help them manage their important files, documents, and unstructured and raw data to help their business succeed. To store their data effectively, the organization should always remember to back up clean data in a timely way that fits their overall data lifecycle. This means looking at the data they are collecting, identifying what needs to be backed up, and understanding how it might need to recover or remove it in the future. By storing the data in a way that reinforces their organization's wider data strategy, one can avoid common data challenges and stay efficient.

## References:

- [1] <https://blog.hubspot.com/website/data-storage>
- [2] Ciulli, Francesca, and Ans Kolk. "International Business, digital technologies and sustainable development: Connecting the dots." *Journal of World Business* 58.4 (2023): 101445.
- [3] Padfield, Rory W., et al. "Digital disruption: Towards a research agenda for sustainability and business in a digital world." *A Research Agenda for Sustainability and Business* (2023): 185.
- [4] Ferreboeuf, Hugues. *Transitioning towards sustainable digital business models*. ECDF Working Paper Series). Einstein Centre Digital Future, 2023.
- [5] Avirutha, Anupong. *Factors enabling the digital change on digital transformation for small and medium businesses*. Diss. Sripatum University, 2023.
- [6] Mentsiev, A. U., et al. "The concept of digitalization and its impact on the modern economy." *International Scientific Conference "Far East Con"(ISCFEC 2020)*. Atlantis Press, 2020.
- [7] Agustian, Kresnawidiansyah, et al. "The Impact of Digital Transformation on Business Models and Competitive Advantage." *Technology and Society Perspectives (TACIT)* 1.2 (2023): 79-93.