



CLOUD COMPUTING AND ANALYTICS

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ABSTRACT

The amount of data being generated in today's fast-paced digital world is expanding at an unpredictable rate, with no prospect of slowing down any time soon, posing challenges for data storage, data security, data processing, and data analysis. Cloud computing and analytics were developed as a response to this problem. Businesses and other organizations' approaches to data management and analysis have been completely transformed by the advent of cloud computing and analytics. Cloud computing is a method of sharing computing resources over the Internet to facilitate widespread network access. This new cloud computing technology is built on top of the established grid computing system, and it provides a different information and service delivery mechanism.

Computing resources, such as data storage, processing power, and application software, are made available to users over the internet in the form of "the cloud," which they may then access and utilize from wherever they have an internet connection. However, analytics is the practice of analyzing data to draw conclusions and choose actions. Analytics may help businesses make more informed decisions and enhance their operations by sifting through the massive amounts of data produced by cloud computing.

The evolution of cloud computing analytics has been a significant aspect of the growth and development of cloud computing technology. In the early days of cloud computing, organizations used cloud-based storage and processing power to store and manage data, but analytics capabilities were limited. As cloud computing technology matured, cloud-based analytics solutions emerged, providing organizations with powerful analytical tools to analyze and gain insights from their data.

Several giant firms have been at the forefront of using cloud computing analytics in recent years, helping to drive the evolution of this technology. Amazon Web Services (AWS) provides a range of cloud-based analytics tools, including Amazon Redshift, Amazon QuickSight, and Amazon Kinesis. These tools enable organizations to store, analyze, and visualize large amounts of data in real time, providing valuable insights to improve operations and customer experience. In addition, the cloud computing infrastructure allows businesses to reduce the cost of purchasing and maintaining their infrastructure. Instead of investing in hardware and servers, businesses can rent computing resources from these cloud service providers and pay only for what they use.

INTRODUCTION

The term "cloud" is commonly used to refer to the public cloud. In the beginning, there was the public cloud. However, after a while, businesses started asking to preserve some data onsite for compliance and regulation purposes. To ensure patients' confidentiality, hospitals and other medical facilities, for instance, had to store their data on-site.

Private cloud computing, or simply private cloud, refers to the use of cloud computing by an organization to store and process either data or applications within the confines of its own data center, protected by the organization's network firewalls. One type of cloud computing architecture, known as a hybrid cloud, combines elements from both public and private clouds. Hybrid cloud organizations realize the public cloud's benefits and migrate some workloads to any of the aforementioned cloud providers (AWS, Azure, etc.).

Additionally, there are three distinct types of cloud computing.- Customers can use the cloud provider's processing (processors, memory), storage (disk space), networking, and other IT infrastructure using Infrastructure as a Service (IaaS). Databases, blockchain platforms, integration services, and other capabilities that normally require knowledge of the underlying hardware are made available to consumers through Platform as a Service (PaaS). Software as a service (SaaS) refers to pre-packaged solutions for a specific need. Salesforce.com, customer relationship management (CRM) software, Oracle's Enterprise Resource Planning (ERP) Cloud, and Microsoft's Azure Dynamics are all good examples.

HISTORY

Since Charles Babbage's 1880s notion of a mechanical calculating machine, computing has advanced at a breathtaking rate throughout the past century. More than a century after Babbage's death, his sketches were turned into functional machines.

Cloud computing has even less of a background. In 2006, Amazon.com introduced its Amazon Web Services platform as the first significant cloud computing service provider. In the years that followed, other tech behemoths, such as Google, Microsoft, Oracle, IBM, and Ali Baba, released their versions of "clouds." A new category of "cloud-native technologies" has evolved in response to the widespread adoption of cloud computing. Users like Walmart and Uber can deploy applications to the cloud with the help of technologies like Kubernetes.

Whether it's through the use of public cloud services provided by cloud computing service providers or through the use of private cloud services created by enterprises themselves, cloud computing has the infrastructure to support new types of computing workloads.

RESEARCH DESIGN AND METHODOLOGY

Research design and methodology refer to the process and strategies used to plan, conduct, and analyze a research study. The research design involves the overall plan of the study, including the research question, objectives, and hypotheses. The design determines the approach, methods, and procedures that a researcher will use to answer the research question or test the hypothesis.

In the context of cloud computing and analytics, exploratory research design can be useful when I'm trying to understand the potential benefits, challenges, and opportunities associated with cloud computing and analytics. This may involve exploring the capabilities of different cloud service providers and analyzing the data that is generated by these systems.

Exploratory research design can help me to identify important research questions and develop hypotheses that can be tested using more rigorous research designs, such as causal research design. By exploring the world of cloud computing and analytics, I can better understand the potential benefits and drawbacks of these technologies and develop new approaches to solving complex problems.

Through this analysis, I can identify the reasons which cause great evolution in various industries/ sectors or businesses such as healthcare, education, finance, retail, etc. Cloud service providers such as Microsoft Azure, google cloud or amazon web service play a critical role in providing cloud computing services such as storage, database, software, servers, etc. to different organizations which help in reducing cost, better productivity, effective decision making, and formulating new strategies.

DATA COLLECTION METHOD

For my research Data can be collected from the website of a cloud service provider company using various methods such as:

Web scraping: This involves using specialized software tools to extract data from the website. The tools can be programmed to extract specific information such as pricing plans, service offerings, customer reviews, and other relevant data related to cloud computing and analytics.

Questionnaire: The questionnaire involves collecting data from a sample of individuals using questions. For my case study, I used an online platform to fill out the questionnaire by the employees of the company who are working in different industries and have some sort of knowledge regarding cloud computing and analytics. And also, to know how their company gets benefits from the use of cloud computing services which are provided by cloud computing providers such as AWS, Microsoft Azure, Google Cloud, etc.

Manual data collection involves manually copying and pasting the data from the website into a spreadsheet or other data collection tool. We collect the data from various websites of cloud service providers and filled the Excel sheet accordingly.

Social Media Monitoring: As a researcher, I monitor social media channels to gather data on customer sentiment toward the cloud service provider company. Social media listening tools can help researchers track mentions of the company, monitor customer complaints, and identify trends.

SAMPLE AND SAMPLE TECHNIQUES

Non-probability sampling is used in the study of cloud computing and analytics, which means that a subset of the population is drawn for analysis rather than the entire population at large. Convenience sampling and purposive sample were the most common forms of non-probability sampling in this research.

Convenience sampling is a non-probability sampling technique that involves selecting participants who are easily accessible or available. In the field of cloud computing and analytics, convenience sampling is used in selecting those samples (cloud service providers) which are easily available on the internet through their website.

Selecting participants for a research project based on predetermined criteria or qualities is an example of purposeful sampling, a non-probability sampling method. These characteristics enable cloud service providers to provide highly scalable, reliable, and cost-effective services to their customers, making cloud computing an attractive option for businesses of all sizes.

INTERPRETATION AND ANALYSIS

By browsing through data, I get to know the use of cloud services has become increasingly popular across various industries and sectors in recent years. Here is an overview of how different industries are using cloud services for data analysis:

Healthcare: Healthcare organizations are using cloud services for data analysis to improve patient outcomes, optimize healthcare operations, and lower costs.

Logistics: Cloud services have transformed the logistics industry by providing real-time access to information and enabling seamless collaboration across different stakeholders in the supply chain.

Retail: Retail companies are using cloud services for data analysis to optimize their supply chain, improve customer experience, and increase sales.

Manufacturing: Manufacturing companies are using cloud services for data analysis to improve operational efficiency, reduce downtime, and optimize supply chain management.

The case study, "Selling Groceries Through the Cloud in a Tier II City in India and RedBus: looking up to the Clouds," provides useful information about how to calculate the return on investment necessary for determining whether or not cloud investments are worthwhile.

We are familiar with the concept of a business model and can identify and evaluate the technological concerns raised by various options for business growth. Finally, it describes the ideas behind cloud-based solutions and shows how a company can gain an edge through their adoption.

From the analysis of the questionnaire, we can find that multiple organizations belong to different industries that use cloud computing services for day-to-day operations. Ultimately, we can say that cloud computing services provide growth, scalability, and flexibility to client companies. Major companies are TCS, Indigo, Strykers, Paytm, etc. The questionnaire was filled out by the staff of reputed companies.

DISCUSSION

This study has concentrated on a systematic literature review of a specific area that consists of small and medium enterprise which belongs to different industries. These businesses use Amazon Web Services (AWS), Microsoft Azure, Google Cloud, Oracle Cloud, IBM Cloud, and others to access a wide range of cloud services.

LIMITATIONS

It includes generalized information such as what is cloud, how it works, various deployment models of a cloud company, advantages and disadvantages of the cloud, and impact on various industries which uses the cloud as one of the services. The study works on the available information through secondary resources as well as generate primary information from the questionnaire. The various limitations and assumptions of a research paper are as follows: -

This cloud computing study relies on simulated or synthetic data rather than real-world data, which may not accurately reflect the complexities of actual cloud environments. There is currently no standard framework or set of metrics for evaluating the performance and effectiveness of cloud computing solutions, making it challenging to compare and generalize research findings across different studies.

The use of cloud computing can raise ethical concerns around data privacy and security, particularly when data is stored and processed across multiple jurisdictions. This cloud computing study is conducted in specific contexts or with specific applications, making it difficult to generalize findings to other applications or industries.

SUGGESTION FOR FUTURE

Future research in this area could address the limitations of this study by including a larger number of case studies and exploring other potential applications of cloud computing. Additionally, future research could explore the long-term impacts of using cloud computing practices on organizational well-being, learning outcomes, and organizational outcomes. Finally, future research ensures that research papers on cloud computing are relevant and valuable in this field and should focus on the collection and analysis of real-world data to ensure that their findings apply to actual cloud environments.

A standard framework and set of metrics should be established for evaluating the performance and effectiveness of cloud computing solutions. This will enable researchers to compare and generalize findings across different studies.

CONCLUSION

This study explored the domain of cloud computing and analytics that transformed organizations' approach to data management and analysis by providing unprecedented access to computing resources and analytical tools which enabled businesses to gain insights and make data-driven decisions in real-time, and help drive innovation and growth across a wide range of industries and sectors.

his study found the impactful growth in terms of revenue and sales of small and medium enterprise which belongs to different industries, that purchases various type of cloud services from giant cloud service providers such as Amazon Web Service (AWS), Microsoft Azure, Google Cloud, Oracle Cloud, IBM, etc.

Facts and insights regarding Amazon Web Service (AWS), Microsoft Azure, Google Cloud, Oracle Cloud, IBM, etc. are provided in this study, which is a contribution to the fields of cloud computing and analytics. This research also identifies the role played by the various cloud service providers by providing a flexible, on-demand computing infrastructure that users can leverage to gain access to and run their software and data in the cloud.

FINAL THOUGHTS AND RECOMMENDATIONS

In conclusion, we can say that there are various industries and sectors such as Healthcare, Finance, and Retail which get benefits from the usage of cloud computing services. These benefits can be categorized as scalability, an on-demand computing infrastructure that allows users to access and use computing resources, including storage, processing power, and applications, over the Internet, without the need for physical infrastructure.

Finally, this study recommends that the challenges which are faced by cloud computing in the current scenario should be resolved in the future with the use of advanced artificial intelligence and machine learning algorithms. The level of security should be increased regarding ethical concerns. Cloud computing should work on real-time data along with historical data, ultimately providing high productivity, scalability, and growth for the organization.

The growth of each organization will give rise to advance cloud computing and analytics in every sector or industry domestically as well as globally.

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