SUSS SINGAPORE UNIVERSITY OF SOCIAL SCIENCES

BIZ ANALYTICS

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Introduction

Business Analytics Software Used Today

Information technology capabilities have evolved rapidly over the past few years and this has helped companies in their pursuit of business analytics. In alignment with this rising trend, software is being continually developed to aid users in analysing company business processes and aid stakeholders in making decisions.

This newsletter presents business analytics software that is widely used by companies today, encapsulated within four key domains of business analytics: Database Management, Data Visualisation, Cloud Computing and Data Mining. These core elements integrate seamlessly to enable companies to derive meaningful insights from data.

Issue #8

→ This issue highlights the different types of Business Analytics Software used today, together with their pros and cons.

→ Updates to BA Programme Curriculum

Database Management

Database Management is deemed to be the core foundation of analytics. It entails the collection, storage and retrieval of data from a database. A proper database management system (DBMS) can improve accessibility to data and allow analysts to employ various analytical techniques and tools associated with it. The table below illustrates some of the advantages and disadvantages of a database management system (Tutorialink, n.d.).

Advantages	Disadvantages
Improved Data Sharing • Provides a common environment where end-users can access and manage data • Allow end-users to better respond to changes in their environment promptly	Increased Costs • Requires complex hardware and software that are costly
Improved Data Integration • Provides an integrated view of the company's data from various sources	Increased Complexity • Requires skilled personnel to create, edit and modify the integrated database, as well as to maintain the system to ensure data security
Enhanced Data Consistencies • Reduces the chances of data inconsistencies, especially if the company have branches across different regions and/or countries	Reduced Efficiency • Reduces efficiency in the retrieval of data when the size of the database grows huge, as a company continues to store more data over the years

Tutorialink. (n.d.). *Advantages and Disadvantages of DBMS: DBMS.* <https://tutorialink.com/dbms/advantage-and-disadvantages-of-dbms.dbms>, accessed on 21 June 2021.

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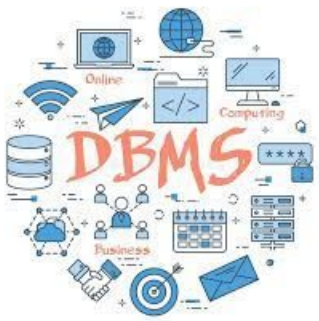
Examples of relevant database management software are listed below, alongside their unique features:

Microsoft SQL Server	IBM DB2	ORACLE DATABASE
Microsoft SQL Server is a relational database management system developed by Microsoft (Wikipedia): • Its primary function is to store and retrieve data when requested by other software applications • There are different editions of Microsoft SQL Server to suit the various needs of different companies	DB2 (Database 2) is a family of data management products developed by IBM (Wikipedia): • It embraces a "hybrid data" strategy to unify and simplify the entire ecosystem of data management, integration and analytical engines • This allows access, sharing and analysis of all types of data wherever they are stored or deployed	Oracle Database is a multi-model database management system developed by Oracle Corporation (Wikipedia): • It is commonly used for running online transaction processing (OLTP), data warehousing (DW) and a combination of the two (OLTP & DW) database workloads • It is available in several modes such as on-premise, on-cloud, or as a hybrid cloud installation

Overall, some key factors to consider when determining an appropriate DBMS include: the complexity of analysis required, ease of use, and employee skill level. For instance, a simple DBMS would be sufficient for simple extraction and analysis, while a more complex DBMS with built-in Artificial Intelligence (AI) or machine learning application programming interface (APIs) may be necessary to employ advanced analytics, e.g., predictive and prescriptive analytics.



Cloud Computing

In simple terms, cloud computing refers to the delivery of different services such as data storage, networking, business intelligence and analytics over the Internet (Mansa, 2020). One of the main advantages of cloud computing is that users do not need to be in a particular place to access the data, which gives much flexibility. There are three types of cloud computing: public, private and hybrid (Raza, 2020). Public cloud computing allows users to access its services over the internet for a fee, while private cloud services provide services to a limited number of people. The hybrid option is a combination of private and public services. The table below illustrates some of the advantages and disadvantages of cloud computing (Raza, 2020).

Mansa, J. (2020). Cloud Computing. Investopedia. <https://www.investopedia.com/terms/c/cloud-computing.asp>

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Advantages	Disadvantages
Improved Accessibility • Enables employees to work remotely as they are able to log-in to their software and retrieve their files and settings from another device from any location	Decreased Security • Exposes users to inherent security risks due to the cloud environment
Enhanced Reliability • Automatically backs up the users' items from time to time so that users do not need to worry should their computers malfunction	Increased Exposure to External Events • Deters employees from working remotely should there be external events such as natural disasters and power outages, which might even cause data to be lost
Reduced Costs • Incurs lower cost as compared to companies procuring and maintaining information management technology	Slower adoptions • Hinders the adoption rate, especially among the older generation, as cloud computing and the transition to it might be challenging for them

Some cloud computing services are listed below:

Microsoft Azure	amazon web services	Google Cloud
Here are some facts about Microsoft Azure (McCoy, n.d.): • Flexible - it is easy and convenient to move resources where the companies prefer and whenever the companies require • Open - it supports any operating systems language and framework • Reliable – there is a 24-hour tech support with 99.95% availability under the Service Level Agreement • Global - data are housed in geo-synchronous data centres • Economical - users will only need to pay for what they use	It is the primary profit driver for Amazon that offers services to help organisations move at a faster rate, lower IT costs, and scale (Page, 2020): It entails 3 main products: • Virtual machine service • Low-cost cloud storage service • Storage system Amazon Web Services (AWS) outpaced its competitors and it has more than ⅓ of the market share as at 2020.	Google's data centres are located in each major region (i.e., Asia, Australia, Europe, North America, and South America) and consist of physical assets such as computers and hard disk drives, as well as virtual resources like virtual machines (Google). Google Cloud offers: • A wide range of products and services to help companies build and scale the things they need • Users the ability to mix and match services into combinations when building the infrastructure they want To see the list of Google Cloud products, visit https://cloud.google.com/products

McCoy, L. (n.d.). Microsoft Azure Explained: What It Is and Why it Matters. <https://ccbtechnology.com/what-microsoft-azure-is-and-why-it-matters/>, accessed on 21 June 2021.
Page, V. (2020). What is Amazon Web and Why is it so Successful? Investopedia. <https://www.investopedia.com/articles/investing/011316/what-amazon-web-services-and-why-it-so-successful.asp>, accessed on 21 June 2021.
Google. (n.d.). Google Cloud Overview. <https://cloud.google.com/docs/overview>, accessed on 21 June 2021.

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Data Visualisation

In the process of delivering insights to key decision makers, the right business intelligence tool for data visualisation is an essential component. The table below illustrates some of the advantages and disadvantages of data visualisation software (Wisdomplexus, n.d.).

Advantages	Disadvantages
Enhanced Graphical Representation • Allows users to show the relationships (if any) amongst variables • Enables the presentation of patterns (if any) within the data through charts such as bar charts or histogram.	Increased Risk of Misrepresentation of Information • Considers only a portion of the data and excludes other data, which might lead to the misrepresentation of information
Improved Communication • Facilitate the sharing of insights through visualisation charts	Triggered Speculations • Draws conclusions that may be speculative and not factual due to the visual representation of information
Increased Interactivity • Enables end users to visualise the data based on their requirements	Increased Distraction • Distracts end-users from focusing on the purpose of the dashboard when it is laden with overly complicated and fancy graphics

Wisdomplexus. (n.d.). Pros and Cons of Data Visualization. <https://www.google.com/amp/s/wisdomplexus.com/blogs/pros-cons-data-visualization/amp/>, accessed on 21 June 2021.

Illustrations of data visualisation software with their distinctive features are given below (Tseng, n.d.; Codersera, n.d.):

tableau	Power BI	Qlik
Tableau is widely used as a visual analytics platform to help users see and understand data: • It is well-known in the industry as a user-friendly data visualisation tool. • It has an intuitive interface that allows non-technical users to develop dashboards to extract insights from the data quickly and easily.	Power BI is a business analytics service developed by Microsoft that provides interactive visualisations and business intelligence capabilities: • It has the capabilities to prepare data as well as to query data with a drag-and-drop data visualisation builder. • Its data visualisation functionality hinges on its tiles, visualised metrics that serves as a starting point into the underlying reports and datasets that allow users to extract insights from the data.	Qlik Sense serves as a data analytics platform for self-service-oriented business intelligence, and is owned by Qlik: • It enables users to conduct business discovery and visual analysis with the aid of direct discovery. • It leverages on a data engine that is associative so that users can explore the data and see the connections and patterns more intuitively.

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Data Mining

Data mining refers to a process that transforms raw data into meaningful information to aid decision making. With the help of data mining software, it enables analysts to look for trends and patterns within the data. Through this, businesses are able to learn more about their customers and operations and how they can meet their business objectives. The table below illustrates some of the advantages and disadvantages of data mining in commercial sectors (Zentut, n.d.).

Examples of data mining software are listed in the table below.
(You can access https://www.softwaretestinghelp.com/data-mining-tools/ to view other data mining tools.)

Advantages	Disadvantages
Improved Targeted Marketing • Enables companies to use insights from data to better market their products/services to existing/potential customers	Increased Costs • Requires users to have knowledge-based training and this leads to an increase in costs
Reduced Risks • Reduces risks through prediction of frauds or other potential high-risk activities	Raised Privacy Concerns • Attracts scepticism about sharing personal information due to privacy concerns and this might hinder the collection of data for mining
Enhanced Revenue Growth • Enables targeted marketing, defects detection and churn identification to help companies to boost their revenue Misuse of information	Misuse of information • Allows exploitation by unethical people who use data mining to discriminate potential customers

Examples of data mining software are listed in the table below.
(You can access https://www.softwaretestinghelp.com/data-mining-tools/ to view other data mining tools.)

IBM SPSS	SAS	rapidminer
IBM-SPSS is a software suite owned by IBM, which was originally produced by SPSS Inc. and later acquired by IBM. The software: • Is used for data mining and text analytics to build models • Offers data mining algorithms with no programming needed • Eliminates unnecessary complications that may be encountered during data transformations	Statistical Analysis System (SAS) is a product of SAS Institute developed for analytics and data management. • Enables users to analyse huge amounts of data and derives insights to facilitate timely decisions • Has a distributed memory processing architecture, which is highly scalable; • Is well suited for data mining, text mining and optimisation	Rapid Miner is an open-source software developed by the company with the same name (Rapid Miner). The software: • Provides a vast range of applications • Enables an integrated environment for deep learning, text mining, machine learning and predictive analysis • Comes with template-based frameworks that allow speedy delivery with reduced errors

Zentut. (n.d.). Advantages and Disadvantages of Data Mining. <https://www.zentut.com/data-mining/advantages-and-disadvantages-of-data-mining/> accessed on 21 June 2021.
Codersera. (n.d.). Tableau Vs Power BI Vs Qlik Sense | Comparison Of Top 3 BI Tools. <https://codersera.com/blog/tableau-vs-power-bi-vs-qlik-sense/>, accessed on 21 June 2021.
Tseng, H. (n.d.). Power BI vs Tableau vs QlikView: Which BI Tool is the Winner? <https://www.selecthub.com/business-intelligence/tableau-vs-qlikview-vs-microsoft-power-bi/>, accessed on 21 June 2021.

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Updates on Business Analytics Programme Curriculum

(From Head of Programme: A/P James Tan)

Listed below are some updates pertaining to the Business Analytics Programme Curriculum in SUSS:

For full-time and part-time students: From the January 2022 Semester, the pre-requisite for ANL317 (Business Forecasting) will be BUS105. ANL321 will no longer be a pre-requisite for ANL317.

For full-time students only: From the January 2022 Semester, BUS489 (Strategy for Business, 10CU) will be replaced by BUS490 (Contemporary Business Strategy, 5CU). Students who take BUS490 will have another 5CU allocated to their Elective basket. Those who had taken BUS489 are not affected by this change.

For part-time students only: From the January 2022 Semester, BUS101 (Management, 5CU) will be replaced by BUS102 (Management in the Digital Age, 5CU).

The above updates are planned curriculum changes, with the development of new courses in the pipeline. The finalised changes will be announced on the Student Portal in due course.

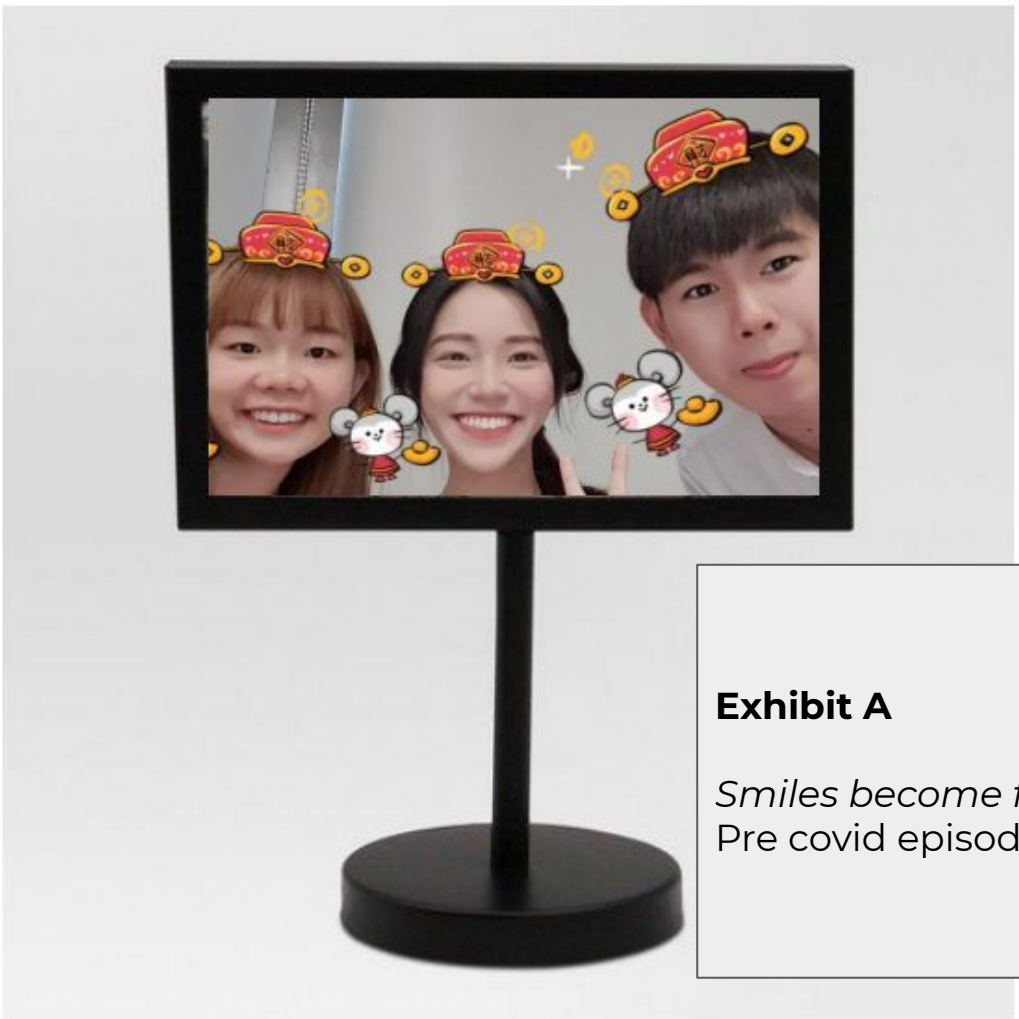

Exhibit A

Smiles become frowns (2019)- Pre covid episode

PREPARED BY

BENNY LIM JIN XIONG | NICHOLE TAM JIE TING | WOO KAI WEN