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UNIVERSITI TEKNOLOGI MALAYSIA

Industry Talk 7: Introduction to Data Visualization by Microsoft Power BI

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Trends of Data Analytics in Different Sectors and reflection of these trends

Automation is a growing trend in data analytics. High data quality is the foundation for high-value business outcomes. The only way to truly exploit the value of modern data, given its magnitude and complexity, is to automate the process of data discovery, preparation, and blending of heterogeneous data. This trend is beneficial to industries like manufacturing, retail, financial services, travel, and hospitality. In recent years, the retail business, for instance, has undergone several pivots. One was in response to the rise of a particular dominating e-commerce platform; another was in response to the pandemic's shutdowns, and yet another was a result of the creation of "multimodal delivery choices".

Furthermore, most people are unaware of the impact COVID-19 has had on health care data analytics. The use of big data and health data analytics has been critical in the fight against COVID-19. Big data analytics and predictive models are being used by lawmakers and researchers to help allocate resources, predict surges, improve patient care and outcomes, and implement preventive measures. The data is arriving at a nearly constant rate. The analysis of health data has resulted in a better understanding of how to respond to and treat patients.

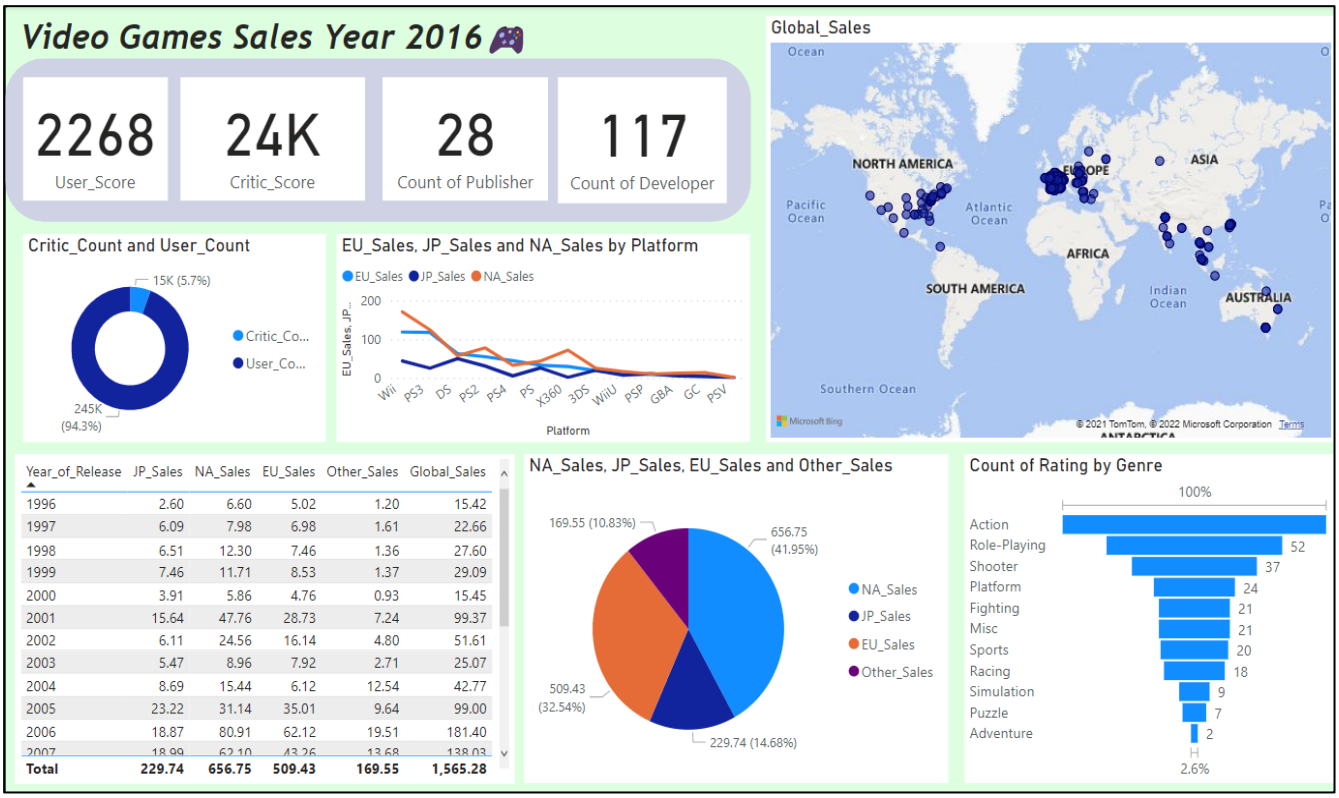
Reflection

With the present trend, we can observe that automation is becoming increasingly popular in data analytics. Automation, as opposed to the previous method of data analysis, helps to analyze data in a more optimal and efficient manner. Experimenting with different machine learning models and waiting for results takes time, on the other hand. If you want to get answers quickly, you'll need analytics automation. As the saying goes, "Today, staying ahead of the competition demands more than back-of-the-envelope reporting. Predictive analytics and data science are essential for staying ahead." Besides ,In the fight against COVID-19, the use of big data and health data analytics has been critical. Senators and researchers are using big data analytics and predictive models to help allocate resources, predict surges, and improve patient care. Health data analysis has led to a better understanding of how to respond to and treat patients.

Reflection of Industrial Talk 7

Microsoft Power BI is a Data Visualization and Business Intelligence tool that converts data from various data sources to interactive dashboards and BI reports. Power BI provides cloud-based services for interactive visualization and provides a simple interface for end users to create their own BI reports and dashboards. Power BI suite comprises several software, connector and services and business users use these set of services to consume data and build BI reports. Microsoft Power BI is used to find insights within an organization's data. Power BI help connect relevant data sources, transform and clean the data into a data model and provide data visualization by creating graphs or charts. Power BI can make users easily connect to the data source, visually see or discover important content, and share it with anyone they want. Moreover, Power BI can also carry out rich modeling, real-time analysis and custom development. Power BI suite which including Power BI desktop app, Power BI services based on Saas, and mobile Power BI apps available for different platforms has different uses for each of them. Power BI desktop app is used for users to create reports while Power BI services work for publish the reports, and Power BI mobile app enable users to view the reports and dashboards. After listening to Industrial Talk 7, I found that the emerging trends which is big data analytics enables us for manage big data in a simpler and faster way and present it in a more interactive and customizable dashboard. In this way, we can save time to view the data at a glance instead of spending time looking at rows of data. Furthermore, big data analytics help organizations or enterprises can have a deeper understanding of the work of various departments by refer to an executive dashboard. Then, organizations or enterprises can improve their management mode according to the situation of each department for the aim to improve the overall efficiency and improve the deficiencies. Therefore, it is not only a user's personal report and visualization tool, but also an analysis and decision engine behind organization. As Stephen Few saying goes, "Numbers has an important story to tell. They rely on you to give them a clear and convincing voice".

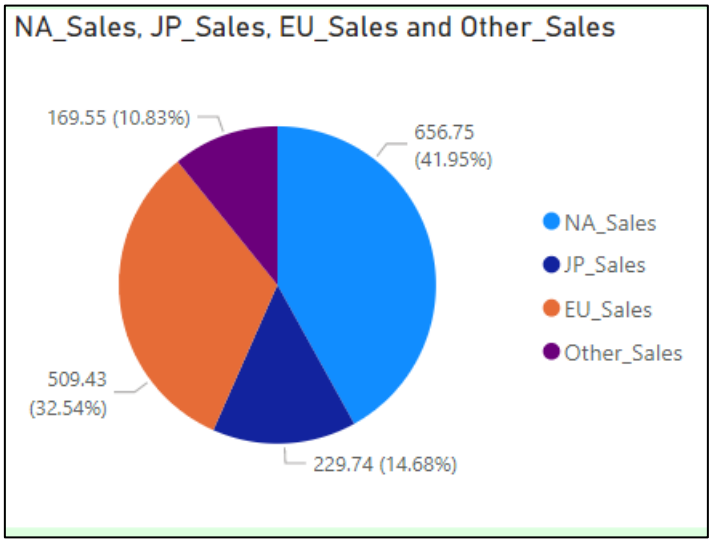
Narration of Analytics



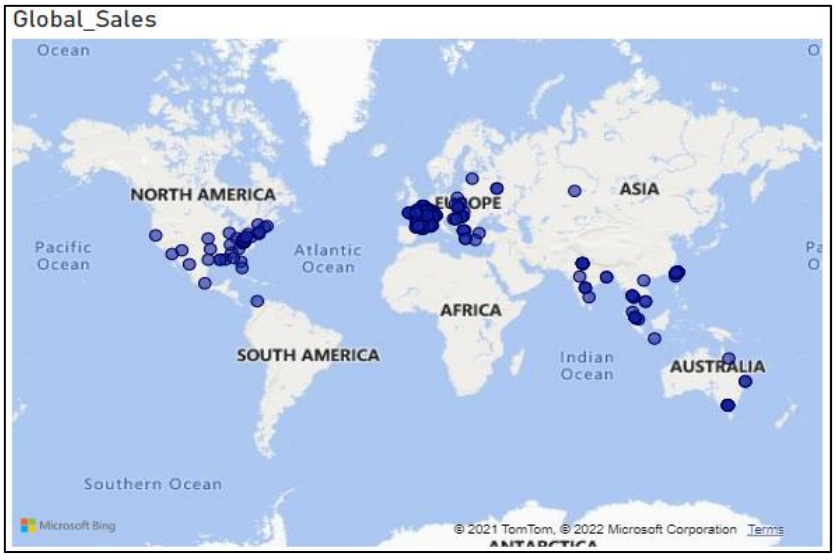
The above dashboard shows the statistics and data of video games sales year 2016.The games sales above are divided into few sales category which is JP_sales, NA_sales, EU_sales and other sales too. The total count of publisher for the video games sales is 28 whereas the total counts of developer is 117.We created 6 different graphics to have a clearer look on the data chosen.

Year_of_Release	NA_Sales
2003	$8.96
2004	$15.44
2005	$31.14
2006	$80.91
2007	$62.1
2008	$57.62
2009	$72.14
2010	$61.86
2011	$51.43
2012	$27.68
2013	$29.08
Total	**$656.75**

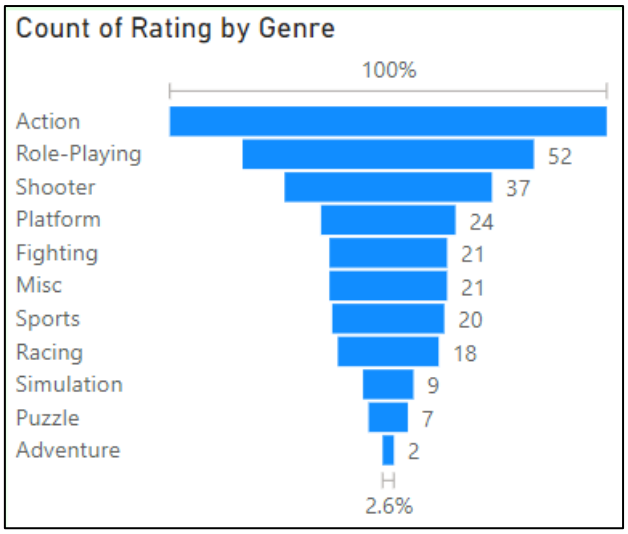
We tend to choose descriptive analytics for the data found above. This is because table shown above describes the happenings over time which is shows the number of sales of North America increased or decreased year over year and whether the sales in 2013 is much better than the year before.



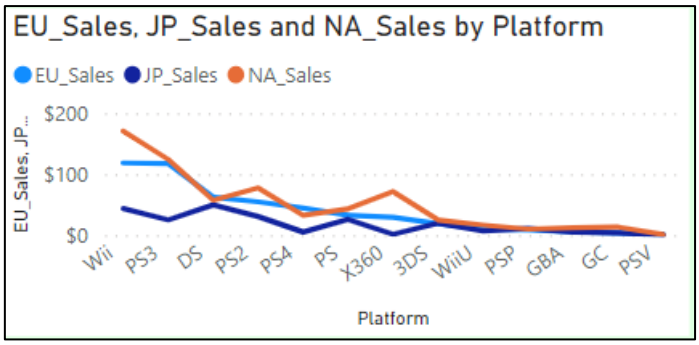
As we can see from the pie chart above, it shows that NA sales has the highest video games sales at 2016 with a sale of $656.75 million. The second highest is EU sales which give them a total of $509.43 million and finally the lowest sale is other sales which is $10.83 million. The difference between NA sales and EU sales is $9.41 million where this shows that the video game sales in these both continent is competitive.



Next, from the visualization map above we can also see that place that have the highest global sales is North America and Europe. This is because most of the game developers are from these both continent which makes them easy to promote their video game production. For example, there is a famous video game competition that is held annually in North America or Europe continents which is Valorant Masters. From this, we can clearly see that the influencer for video games started from these both continents.

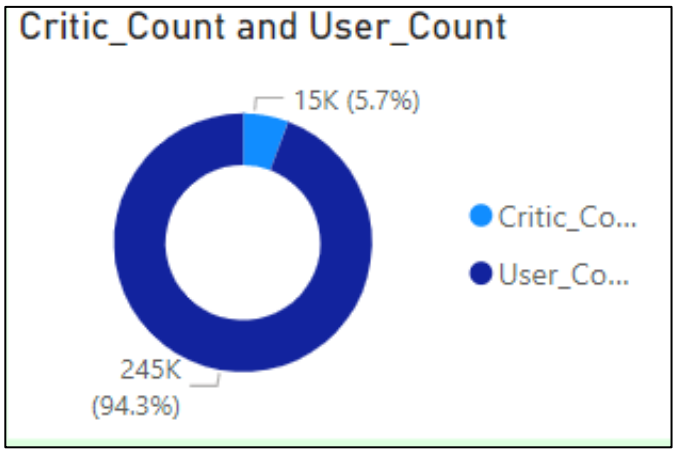


Next, the funnel chart above shows the count of rating of video games by genre. Action video games tend to have a higher rating than another genre. This is because the games created included lots of challenges and they are a mix of combat from jumping and solving puzzles, which above all, it requires our hand reflexes. For instance, few example of action video games are God of War, Grand Theft Auto V, Genshin Impact and etc. These are few games that attract players easily because of the graphic design and the various spectrum activities in it. Whereas adventure video games receive the least support from players worldwide



Platform	Developer
Wii	Nintendo
Wii	Nintendo
Wii	Nintendo

Other than that, the line chart above shows that the total sale of North America, Japan and Europe by platform. Wii is one of the platforms that have the highest sales among others. This can be explained because of the developer which is 'Nintendo'. The developer reduced focus on computational power so that the games will be much less expensive to produce. After research, I found that the Wii was extremely a popular platform at launch, causing the system to be in short supply in certain markets.



The donut chart above shows the critic count and user count from video games sales at 2016.As we can see from the chart above, there is a huge difference for these two counts. This is because people tend to put their own review towards the game and publish to share their experience. But in another way, this is not a good way to give feedbacks towards any production because it might affect people point of view towards a particular game just by looking at the comments. Critic count is counted by the compilation of reviews online like Rotten Tomatoes is one of the Metacritic websites.

Variable Transformation

Before:

Name of Games	Platform	Year_of_Release	Genre	Publisher	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales	Critic_Score	Critic_Count	User_Score	User_Count
Wii Sports	Wii	2006	Sports	Nintendo	41.36	28.96	3.77	8.45	82.53	76	51	8	322
Super Mario Bros.	NES	1985	Platform	Nintendo	29.08	3.58	6.81	0.77	40.24				
Mario Kart Wii	Wii	2008	Racing	Nintendo	15.68	12.76	3.79	3.29	35.52	82	73	8.3	709
Wii Sports Resort	Wii	2009	Sports	Nintendo	15.61	10.93	3.28	2.95	32.77	80	73	8	192

After:

Name	Platform	Year_of_Release	Genre	Publisher	NA_Sales	EU_Sales	JP_Sales	Other_Sales	Global_Sales	Critic_Score	Critic_Count	User_Score	User_Count
Wii Sports	Wii	2006	Sports	Nintendo	$41.36	$28.96	$3.77	$8.45	$82.53	76	51	8	
Mario Kart Wii	Wii	2008	Racing	Nintendo	$15.68	$12.76	$3.79	$3.29	$35.52	82	73	8	
Wii Sports Resort	Wii	2009	Sports	Nintendo	$15.61	$10.93	$3.28	$2.95	$32.77	80	73	8	
New Super Mario Bros.	DS	2006	Platform	Nintendo	$11.28	$9.14	$6.5	$2.88	$29.8	89	65	9	

The picture above shows the data that has been chosen before and after the variable transformation. At first, data was imported from http://www.data.gov.my/ . Once we imported the data, we transfer it to Microsoft Excel and into Microsoft Power BI to visualize our data.Then, we transform the variable and clear unwanted data by editing the query.

I. The variable names have been changed from ‘Name of Games’ to ‘Name’ for the first column.

II. The data was cleared from 21456 rows to 289 rows by erasing all the blanks, nulls and also value from 0.01 to 0.09. This can be seen that row number two has been erased since there is incomplete data in it.

III. The datatype for ‘NA_Sales’, ‘EU_Sales’, ‘JP_Sales’, ‘Other_Sales’ and ‘Global_Sales’ has been changed from multiple decimal values to a fixed decimal place for all values respectively.

IV. The datatype for ‘Critic_Count’ is also changed from decimal values to whole number.

Now the data above shows the usable variables with a count of 289 rows and 16 variables.

Question

Question 1: Why does the total sales increases each year?

Answer: From the visualization that we did in the dashboard above, the sales are increasing by year based on the game releases on that year. This is because when the year goes on, developers tend to know more about the interest and needs of the players. We can see from the dashboard that North America sales are the highest throughout from 1996 to 2016.This can be proved by the various games created by their country in this generation has really attract players like Valorant, Genshin Impact and FIFA. In detail, one of the reasons can also be related with the rise of different streaming game services like Xbox Game Pass Ultimate, and online distribution services like Steam or Epic Games Store. With the increase of players in video games platform, the sales will gradually increase by time to time.

Question 2: What is the relationship between user score and critic score?

Answer: These both scores are important for a developer to have feedback towards their production. A user score is a review or feedback conducted by any random person who have access to the video games and publishes their experience to a social media platform. Whereas critic score which is also known as meta critic is a website that aggregates reviews of TV shows, video games or music albums. For each video game that is produced, the score from each user review will be averaged. From the donut chart above we can see that user score is higher than critic score. This shows that the video games in 2016 are all based on the review of a user.

Conclusion on our case study: From all the data collected and analysed, increase of video games sales in every year has given impact to the relationship of user score and critic score.Hence,this has caused the changed of data gradually from 1996 to 2016.We can clearly see this changes from the table given in the dashboard.