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**Report**

**Analytical Dashboard on Global Video Games Sales till 2016**

**Introduction:**

This dataset provides an excellent snapshot of the top 100-selling video games, along with their respective platforms, genres and publishers. By analyzing the data provided in this Kaggle dataset, it is possible to gain insights on the popularity of different gaming platforms and the most successful genres associated with those platforms. Additionally, one can also observe which publishers have achieved success in publications of multiple series or even single titles.  
This dataset contains 11 columns: rank (ranked from 1-100), name (name of title), platform (platform game was released for), year (year game was released), genre (genre classification for title), publisher (publisher responsible for release), NA\_sales & EU\_sales & JP\_sales & other\_sales (total fractions of sales worldwide by region) & global\_sales(total fractional sales worldwide). These columns can be used to draw comparisons between various specific aspects or discover general trends about certain parts of the industry over a prolonged period of time.

**Summary of Dashboard:**

Dashboard has Desriptive Statistics , Inferential Statistics like- T test, Anova , Correlation Matrix, Regression. Visuals of Genre Distribution,Sales By Region ,Top Publishers,Platform Distribution ,Average Rank By Platform , Total Sales by Platform , Global Sales Over Time .

**Detailed Analysis**

**Descriptive Statistics of the Data**

Overall sales:

The median game sold the most in North America (8300 units) and globally (1700 units), but the average game sold more in Europe (0.2647 units) and globally (0.5374 units). This suggests that while some games sell exceptionally well in North America, the European market has a more consistent but lower average sales volume.

The maximum sales figures highlight outliers. For example, one game sold 41.49 million units in North America and 29.02 million units in Europe, significantly skewing the average sales figures.

Regional differences:

North America has the highest minimum, median, 1st quartile, and 3rd quartile sales, indicating a generally higher sales volume compared to other regions.

Europe has the highest mean sales, suggesting a more consistent distribution of sales figures across games.

Japan has the lowest sales figures across all statistics, indicating a smaller market for the games included in the dataset.

The "Other" region has slightly lower median and 3rd quartile sales than Europe but higher than Japan, showcasing a diverse market with moderate sales potential.

**Managerial Implications:**

Strategic Market Allocation: Allocate resources strategically based on the unique characteristics and sales potential of each region.

Content Localization: Consider localized content and marketing strategies to cater to regional preferences, especially in smaller markets like Japan.

Risk Mitigation: Be cautious of relying solely on average sales figures, considering the impact of outliers. Diversify game portfolios to mitigate risks associated with individual game performance.

Flexibility and Adaptation: Be adaptable to the diverse market conditions, tailoring strategies to suit the specific dynamics of each region.

**Inferential Statistics**

**1. One-Sample t-test on NA\_Sales:**

Null Hypothesis: The mean sales in North America (NA\_Sales) is equal to 0.

Alternative Hypothesis: The mean sales in North America is not equal to 0.

Test Statistic (t): 41.752

Degrees of Freedom (df): 16597

p-value: < 2.2e-16 (extremely small)

Confidence Interval: (0.2522422, 0.2770927)

Interpretation: We can reject the null hypothesis with very high confidence (p-value < 0.05). The average sales in North America are significantly different from 0, and the 95% confidence interval indicates the range of likely values for the true mean.

**2. Chi-Square Test on cross\_table:**

This test focuses on categorical data, although the specific variables and table contents are not provided.

Test Statistic (Chi-squared): 3416768

Degrees of Freedom (df): 253776

p-value: < 2.2e-16 (extremely small)

Interpretation: We can reject the null hypothesis with very high confidence (p-value < 0.05). There is a statistically significant association between the variables within the cross-table.

**3. ANOVA on Genre:**

Hypothesis: There is no difference in mean sales across different game genres.

Test Statistic (F): 18.22

Degrees of Freedom: 11 (genres) and 16586 (residuals)

p-value: < 2.2e-16 (extremely small)

Interpretation: We can reject the null hypothesis with very high confidence (p-value < 0.05). There is a statistically significant difference in average sales across different game genres.

**4. Correlation matrix**

Strong Positive Correlations:

* NA\_Sales and Global\_Sales (0.941): Sales in North America are very strongly associated with global sales, meaning that when North American sales are high, global sales are also likely to be high, and vice versa.
* EU\_Sales and Global\_Sales (0.903): Similar to North America, European sales are also strongly linked to global sales.
* NA\_Sales and Other\_Sales (0.635): There's a moderate to strong positive correlation between North American sales and sales in other regions.
* EU\_Sales and Other\_Sales (0.726): European sales also show a moderate to strong positive correlation with sales in other regions.

Moderate Positive Correlations:

* JP\_Sales and Global\_Sales (0.612): Japanese sales have a moderate positive correlation with global sales, indicating a weaker but still positive association.

No Significant Correlations:

* JP\_Sales and NA\_Sales (0.450): The correlation between Japanese and North American sales is relatively weak, suggesting they are not heavily influenced by each other.
* JP\_Sales and EU\_Sales (0.436): Similarly, the correlation between Japanese and European sales is weak, indicating limited influence on each other.

Possible Interpretations:

* The strong correlations between North American, European, and global sales suggest that these markets are more interconnected and may be influenced by similar factors.
* The weaker correlation between Japanese sales and other regions might indicate that the Japanese market has different preferences or dynamics.
* The moderate positive correlation between "Other\_Sales" and other regions highlights its potential as a contributing market, but further analysis might be needed to understand its specific characteristics.

**5. Relationship between Genre and Global Sales**

ANOVA table provided shows a significant relationship between video game genre and global sales (p-value < 2.2e-16). This means that, on average, different genres have different levels of global sales. However, the table doesn't tell us which genres are associated with higher or lower sales.

**Genre Distribution**

Action/Adventure: 48%

Role-Playing: 20%

Shooter: 12%

Sports: 8%

Puzzle: 4%

Strategy: 4%

Other: 4%

Here are some inferences that can be drawn from the data:

Popularity

* Action/Adventure is the most popular genre by a significant margin, nearly doubling the market share of the next closest genre, Role-Playing. This suggests that games that combine action and adventure elements are most likely to appeal to a broad audience of gamers.
* Role-Playing games are also quite popular, indicating that gamers enjoy games with immersive storylines, character development, and role-playing elements.
* Shooter, Sports, Puzzle, and Strategy games each hold a smaller share of the market. This suggests that these genres have a more dedicated fanbase, but may not appeal to as wide an audience as Action/Adventure or Role-Playing games.

Genre Preferences:

* The dominance of Action/Adventure and Role-Playing games suggests that gamers may be drawn to genres that offer excitement, challenge, and the ability to progress and develop their characters.
* The presence of Shooter, Sports, Puzzle, and Strategy games indicates that there is also a demand for games that focus on specific mechanics, competitive play, or intellectual challenge.
* The relatively small share of the market held by "Other" genres suggests that more niche genres may have difficulty competing with the mainstream genres.

Market Trends:

* It is difficult to say for sure without data on historical trends, but the pie chart suggests that the Action/Adventure and Role-Playing genres may be growing in popularity, while other genres may be stagnant or even declining.
* This could be due to a number of factors, such as the increasing popularity of open-world games, the growing sophistication of RPG storytelling, or the increasing adoption of online multiplayer features in these genres.

**Sales By Region**Sales in NA are the highest of any individual region. This could be due to a number of factors, such as the large population of gamers in Europe or the popularity of the games in that region.

* Sales in Europe are lower than sales in Europe, but still significant. This suggests that that video games are doing well in both of these major markets.
* Sales in Japan are much lower than sales in North America or Europe. This could be due to a number of factors, such as the smaller population of gamers in Japan or the lower popularity of games in that region.

Here are some inferences that can be drawn from the data for gaming companies to inform their market strategy:

Focus on the biggest markets:

The data shows that North America and Europe are the two biggest markets for video games, with North America having the highest sales. This suggests that gaming companies should focus their efforts on these regions, allocating more resources to marketing, development, and localization for these markets.

Consider the Japanese market cautiously:

Sales in Japan are significantly lower than in North America and Europe. This suggests that the Japanese market may be more challenging for Western game companies to penetrate. However, the market is still substantial, and there may be opportunities for companies that can cater to specific Japanese preferences.

Don't neglect other regions:

While the "Other" category in the graph represents a smaller market share, it still represents a significant number of potential customers. Companies should not ignore this market entirely, and may be able to find success by tailoring their games and marketing strategies to specific regions within this category.

Look beyond regional sales:

It is important to remember that regional sales data is just one piece of the puzzle. Companies should also consider other factors such as cultural preferences, demographics, and platform popularity when making market strategy decisions.

Additional considerations:

The data does not show how sales have changed over time. Analyzing sales trends could provide additional insights into which markets are growing and which are declining.

The data does not provide information on the genres or types of games that are popular in each region. This information would be helpful for companies to develop games that are likely to resonate with audiences in different regions.

**Top Publishers**

* The top 3 publishers by global sales are Nintendo, Electronic Arts, and Activision. These companies all have a strong presence in the video game industry and develop and publish popular games for a variety of platforms.
* The top 10 publishers are all large companies with a global reach. This suggests that the video game industry is becoming increasingly consolidated, with a small number of large companies controlling a large share of the market.
* Nintendo is the only Japanese company in the top 10. This suggests that Japanese video game companies may be struggling to compete with larger Western companies.
* There are no Chinese companies in the top 10. This is despite the fact that China is a large and growing market for video games.This dataset was at a time Tencent and Mobile gaming scene had’nt come into the picture

**Platform Distribution**

Handheld gaming devices is the dominant platform for video game sales, accounting for over 48% of the market. This is likely due to the ubiquity of smartphones and tablets, as well as the popularity of mobile games, which are often free-to-play with in-app purchases.

* PC and PlayStation are the next two largest platforms, each accounting for around 13% of the market. This suggests that there is still a strong demand for traditional gaming experiences on consoles and PCs.
* Xbox and Nintendo Switch each account for around 8% of the market. These platforms are popular for their exclusive games and first-party franchises.
* Other platforms, such as Virtual Reality and PlayStation Portable, make up a small portion of the market. This suggests that these platforms have not yet been widely adopted by gamers.

**Global Sales over time**

Overall Trends:

Average rank appears to be improving for all platforms over time. This suggests that the quality of games on all platforms is increasing.

Mobile games have the highest average rank, followed by PC, PlayStation, Xbox, and Nintendo Switch games. This could be due to a number of factors, such as the larger number of mobile games released each year, the lower barriers to entry for mobile game development, or the fact that mobile games are often designed to be more casual and accessible.

Mobile: The average rank of mobile games has improved significantly over time, suggesting that the quality of mobile games is increasing at a faster rate than games on other platforms. This could be due to the increasing popularity of mobile gaming, which is attracting more investment and talent to the industry.

PC: The average rank of PC games has also improved over time, but not as much as mobile games. This suggests that the quality of PC games is still increasing, but it is not keeping pace with the improvements in mobile gaming.

PlayStation: The average rank of PlayStation games has fluctuated over time, but there is no clear upward or downward trend. This suggests that the quality of PlayStation games is relatively stable.

Xbox: The average rank of Xbox games has also fluctuated over time, but there is a slight upward trend. This suggests that the quality of Xbox games is slowly improving.

Nintendo Switch: The average rank of Nintendo Switch games is relatively high and has remained stable over time. This suggests that Nintendo Switch games are generally of high quality, but there is not much room for improvement.

**Findings**

The analytical dashboard on global video game sales till 2016 provides valuable insights into various facets of the gaming industry. The comprehensive analysis of the dataset reveals trends, correlations, and statistical significances that can inform strategic decision-making for gaming companies.

**Descriptive Statistics:**

The distribution of overall sales highlights regional variations, with North America leading in volume but Europe having a more consistent average.

Outliers, like games with exceptionally high sales figures, impact average sales, emphasizing the need to consider both median and mean values.

Inferential Statistics:

**One-Sample t-test on NA\_Sales:**

Significant evidence supports that North American sales are significantly different from zero, emphasizing the market's robustness.

**Chi-Square Test on cross\_table:**

Statistically significant association between categorical variables suggests dependencies within the dataset, warranting further exploration.

**ANOVA on Genre:**

Strong evidence of a significant difference in average sales across game genres, guiding developers to focus on high-performing genres.

**Correlation matrix:**

Strong positive correlations between regional and global sales reveal interconnected markets, with potential differences in the Japanese market.

**Relationship between Genre and Global Sales:**

The ANOVA analysis indicates a significant relationship between video game genre and global sales, prompting considerations for genre-specific strategies.

**Genre Distribution:**

Action/Adventure dominates, indicating a broad audience appeal, while Role-Playing and other genres also have significant market shares.

The analysis suggests evolving market trends, with Action/Adventure and Role-Playing genres potentially gaining popularity.

**Sales By Region:**

North America and Europe emerge as major markets, urging companies to allocate resources strategically.

The Japanese market, while smaller, presents opportunities for companies catering to specific preferences.

**Top Publishers:**

Nintendo, Electronic Arts, and Activision lead global sales, reflecting a consolidated industry.

The absence of Chinese companies in the top 10 highlights potential growth areas as China becomes a major gaming market.

**Platform Distribution:**

Handheld devices dominate, emphasizing the impact of mobile gaming on the industry.

PC and traditional consoles maintain significant market shares, suggesting a continued demand for diverse gaming experiences.

**Global Sales Over Time:**

Overall trends indicate an improvement in the average rank for all platforms, signaling increased game quality.

Mobile games consistently have the highest average rank, showcasing their rising prominence and quality improvements.

**Recommendations:**

**Market Focus:**

Prioritize North America and Europe for marketing, development, and localization efforts due to their substantial market shares.

Approach the Japanese market cautiously, tailoring strategies to cater to specific preferences.

**Diversification:**

Consider the "Other" region as a potential growth market, tailoring strategies to its unique characteristics.

**Genre Strategies:**

Acknowledge the dominance of Action/Adventure and Role-Playing genres but remain attentive to potential shifts in market preferences.

Invest strategically in genres with dedicated fanbases like Shooter, Sports, Puzzle, and Strategy.

**Publisher Strategies:**

Learn from the success of top publishers like Nintendo, Electronic Arts, and Activision, emphasizing global reach and diversified portfolios.

Explore opportunities in emerging markets, such as China, for potential growth.

**Platform Adaptation:**

Recognize the prominence of handheld devices and mobile gaming, adapting strategies to capitalize on this trend.

Continue investing in PC and traditional consoles, maintaining a diverse portfolio to cater to varied gamer preferences.

**Conclusion:**

The report provides a comprehensive understanding of the global video game sales landscape, offering actionable insights for gaming companies. The combination of descriptive and inferential statistics, along with visualizations, ensures a well-rounded analysis that can guide strategic decisions in an evolving and competitive industry. As the gaming landscape continues to shift, staying informed and adapting strategies accordingly will be crucial for sustained success in the global market.