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**TECHNICAL REPORT FOR APEX REALMS VIDEO
GAMES**

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Introduction

Objective of the Project

This analysis examines video game sales trends to identify key factors influencing sales performance across different platforms, regions, and genres. The goal is to provide insights into market dynamics and consumer preferences to support data-driven decision-making.

Problem Being Addressed

The analysis seeks to determine what drives video game sales and how trends vary over time. Key questions include: Which genres and platforms generate the highest revenue? How do sales differ by region? Are there noticeable patterns in sales performance?

Key Datasets and Methodologies

The analysis is based on video game sales data, including total sales, platform distribution, and regional breakdowns. Microsoft Excel was used for data processing, analysis, and visualization, with pivot tables and charts employed to identify trends and compare performance metrics.

Story of Data

Data Source

The dataset was obtained from Kaggle: [Video Game Sales Dataset](#), which compiles sales data for video games across multiple platforms and regions.

Data Collection Process

The data was aggregated from various industry sources, including publisher reports and sales tracking platforms. It provides historical sales figures, offering a comprehensive view of the gaming market.

Data Structure

The dataset is structured in a tabular format, where each row represents a video game, with the following columns:

- **Rank** – The ranking of the game based on sales.
- **Name** – The title of the video game.
- **Platform** – The gaming console or system it was released on.
- **Year** – The release year of the game.
- **Genre** – The category of the game (e.g., Action, Sports, RPG).
- **Publisher** – The company that published the game.
- **NA Sales** – Sales in North America (in millions).
- **EU Sales** – Sales in Europe (in millions).
- **JP Sales** – Sales in Japan (in millions).
- **Other Sales** – Sales in other regions (in millions).
- **Global Sales** – Total worldwide sales (in millions).

Important Features and Their Significance

- **Rank:** Helps identify the most successful games based on sales.
- **Name & Platform:** Allows analysis of top-performing games on different systems.
- **Year:** Reveals sales trends over time.
- **Genre:** Provides insights into consumer preferences.
- **Publisher:** Identifies dominant companies in the gaming industry.
- **Regional Sales (NA, EU, JP, Other):** Highlights market performance in different regions.
- **Global Sales:** Measures overall success and market influence of a game.

Data Limitations or Biases

- **Historical Data:** The dataset may not reflect recent trends, especially with the rise of digital game sales.
- **Physical Sales Focus:** Digital distribution platforms such as Steam, PlayStation Store, and Xbox Marketplace may not be fully represented, leading to an incomplete market view.

Data Splitting and Preprocessing

Data Cleaning

The dataset was already pre-cleaned before being uploaded to Kaggle, meaning there were no duplicates, missing values, or inconsistencies. However, to ensure better usability in Excel, the following formatting steps were performed:

- Column headings were formatted for consistency and readability.
- The dataset was converted into a standard Excel table for easier analysis using pivot tables and filters.

Handling Missing Values

There were no missing values in the dataset, so no imputation or deletion was required.

Data Transformations

No additional transformations were performed on the dataset.

Data Splitting

For analysis purposes, the data was split into:

- Independent Variables: Name, Platform, Year, Genre, Publisher.
- Dependent Variable: Rank, Sales columns (NA Sales, EU Sales, JP Sales, Other Sales, Global Sales).

Industry Context

This dataset belongs to the video game industry, a multi-billion-dollar sector spanning console, PC, and mobile gaming.

Stakeholders

The findings from this analysis will be valuable to:

- **Game Developers:** To understand which genres and platforms have the highest sales potential, helping them design successful games.
- **Publishers:** To determine market trends and allocate marketing budgets efficiently.
- **Platform Holders:** To assess platform performance and strategize game releases.
- **Gamers:** To gain insights into popular gaming trends and industry shifts. Value to the Industry

Value to the Industry

- Success in the gaming industry varies by stakeholder:
- Game Developers seek innovation, critical acclaim, and strong player engagement.
- Publishers measure success through global sales, high ROI, and franchise growth.
- Platform Holders focus on market share, subscriptions, and exclusive content.
- Gamers value high-quality, engaging, and affordable games.
- Investors look for rising stock prices, revenue growth, and profitability.
- Esports & Content Creators thrive on high viewership, sponsorships, and sustainable careers.

Overall, the industry's success is driven by financial performance, player satisfaction, innovation, and sustainability.

Pre-Analysis

Key Trends

1. **Platform Performance:** PlayStation and Xbox dominate global sales, particularly in North America (NA) and Europe (EU), while Nintendo leads in Japan (JPY) due to local preferences.
2. **Regional Genre Preferences:**
 - RPGs and fighting games perform exceptionally well in Japan.
 - First-person shooters (FPS) and sports games dominate in North America.
 - EU sales are more evenly distributed across multiple genres.
3. **Publisher Influence:** Publishers like Nintendo, Sony, and Activision Blizzard consistently produce top-ranked, high-grossing games worldwide.
4. **Sales Distribution:**
 - Multi-platform games tend to have higher global sales due to broader availability.
 - Exclusives perform better on their respective platforms, with Nintendo games excelling in Japan and PlayStation/Xbox exclusives leading in NA and EU.

Potential Correlations

- Does Rank Equal Sales? Higher-ranked games don't always translate to higher global sales—some regionally dominant games underperform globally due to niche appeal.
- Regional Publisher Trends: Certain publishers dominate specific regions, influencing sales performance and platform success.
- Cross-Regional Comparisons: NA sales for top-ranked games often exceed EU sales, but EU sales tend to be more evenly spread across multiple titles.

Initial Insights

- Platform and regional preferences heavily influence global sales. PlayStation and Xbox thrive in the West, while Nintendo leads in Japan.
- Cultural and gameplay differences impact regional success. A game that is a best-seller in Japan may not perform well in NA, and vice versa.
- Games with strong multi-region performance achieve higher global sales than regionally dominant titles.
- Multi-platform releases provide a competitive advantage, whereas exclusives rely on strong platform user bases to succeed.

In-Analysis

Unconfirmed Insights

1. Market Dominance & Industry Trends

- Nintendo leads in both game sales (Wii Sports as the best-selling game) and publisher revenue (\$1.8B global sales), suggesting strong brand loyalty and a successful franchise strategy.
- The PlayStation 2 (PS2) remains the best-selling platform (\$1.3B in sales), reinforcing its dominance in gaming history.
- Some platforms like SAT, GEN, and DC report zero global sales, indicating obsolescence or lack of market impact.

2. Regional Preferences & Platform Performance

- **North America:** Prefers PS2, X360, Wii, DS, and PS3, showing a strong console gaming culture.
- **Europe:** More evenly distributed platform preferences, indicating a balanced market.
- **Japan:** Handheld gaming thrives, with the DS leading at \$200M in sales.

3. Genre-Specific Trends

- Action games dominate globally (\$1.8B in revenue), showing broad appeal.
- North America & Europe: Favor Action & Sports, highlighting a preference for fast-paced, competitive gameplay.
- Japan: Action games are the top choice, while Puzzle games underperform globally (\$200M total sales), suggesting low demand in AAA gaming.

4. Publisher Revenue & Market Gaps

- Nintendo is the top-grossing publisher (\$1.8B), while THQ struggles (\$300M total revenue), likely due to weaker IPs or poor market penetration.

Recommendations

1. Leverage Genre Trends

- Publishers should invest heavily in Action & Sports games, as they consistently perform well across all major regions.
- Consider repositioning Puzzle games or integrating them into mobile-first monetization strategies.

2. Targeted Regional Strategies

- North America & Europe: Focus on console gaming and blockbuster franchises.
- Japan: Capitalize on handheld gaming (DS) and action-driven IPs.

3. Platform-Specific Growth Strategies

- Strengthen multi-platform releases to maximize global reach.
- For exclusives, ensure they align with dominant regional platforms (e.g., Nintendo for Japan, PlayStation/Xbox for NA & EU).

4. Revive or Sunset Legacy Platforms

- Further analysis on SAT, GEN, and DC's market exit could inform potential retro gaming opportunities or confirm their complete obsolescence.

Analysis Techniques Used in Excel

- **Pivot Tables:** Used to summarize sales by platform, publisher, region, and genre for trend identification.
- **Pivot Charts:** Created visual representations of revenue distributions across different segments.
- **Sorting & Filtering:** Applied to analyze top-performing publishers, highest-selling platforms, and regional gaming preferences.

Post-Analysis and Insights

Key Findings

1. Regional Gaming Trends

- Europe saw steady growth from 1998 to 2011, peaking at \$200M annually, but sales declined after 2012 and vanished by 2020.
- Japan had inconsistent sales trends, with growth from 1996 to 2012 but no sales from 2013 onward.
- Other regions entered the market in 2006, peaked in 2011, but also experienced a complete decline after 2012.

2. Genre Performance

- Action games dominate globally, earning \$1.8B in total sales, with GTA V leading at \$55.9M.
- Sports games (\$1.3B) thrive, with Wii Sports (\$82.7M) as the top-seller and Electronic Arts leading with \$500M.
- Shooting games (\$1B) perform well, especially in North America, led by Call of Duty: Black Ops (\$31M).
- RPGs (\$900M) are strongest in Japan, with Pokémon Red/Blue (\$31.4M) as the top-seller.
- Puzzle and Strategy genres (\$200M each) underperform, with Tetris (\$35.8M) as the only notable puzzle title.

3. Platform Preferences

- PlayStation 2 remains the top-selling platform across multiple genres.
- Wii leads in sports and miscellaneous games, reinforcing Nintendo's strength in casual gaming.
- Xbox 360 dominates the shooting genre, reflecting its appeal among FPS players.
- PC remains the go-to platform for strategy and RPG games, aligning with expectations.

4. Publisher Dominance

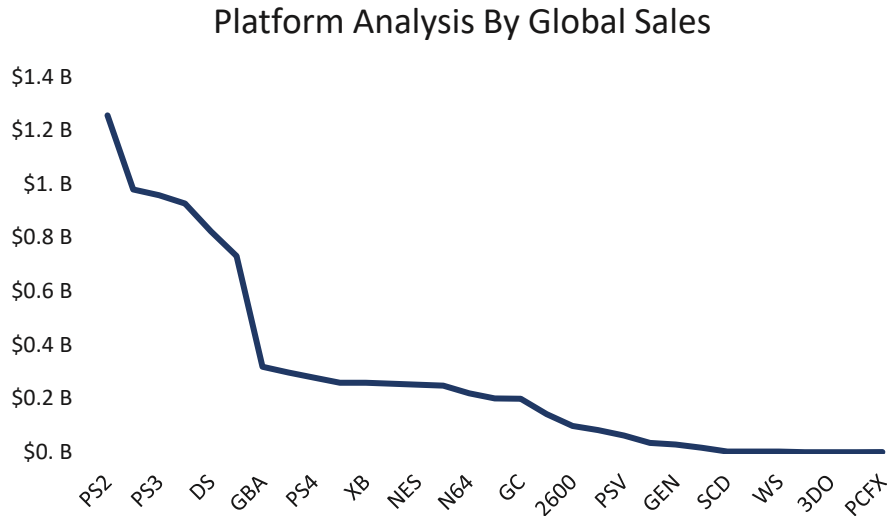
- Nintendo dominates across multiple genres, particularly in RPG, racing, and puzzle games.
- Electronic Arts leads the sports genre (\$500M), while Activision dominates the shooting genre (\$300M).
- No publishers reported sales in the Adventure or Strategy genres, indicating a fragmented market.

Comparison with Initial Findings

1. The expectation that Europe and Japan would maintain strong gaming markets was incorrect. Both regions saw a sharp decline after 2012, with sales dropping to zero.
2. Action games were expected to perform well, but their dominance at \$1.8B exceeded initial projections.
3. The assumption that RPGs would be Japan's top genre was challenged. While strong, they were not as dominant as action games.
4. Puzzle and Strategy games underperformed significantly, reinforcing the idea that they are niche markets with fewer mainstream hits.
5. Nintendo's dominance was anticipated, but its broad success across multiple genres highlights its adaptability.
6. The expectation that the Xbox 360 would be strong in shooting games was confirmed, reinforcing its FPS-friendly design.
7. The decline in sales across all regions post-2012 was unexpected, suggesting external market shifts like mobile gaming, free-to-play models, or digital downloads replacing physical sales.

Data Visualizations & Charts

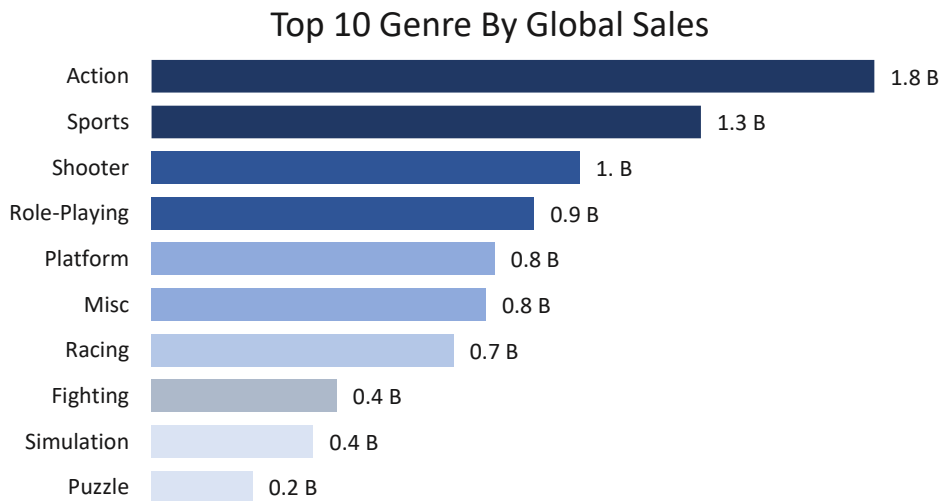
1. Platform Analysis by Global Sales



Explanation

- PS2 had the most global sales with over \$1.2B in revenue, followed by PS3. There's a decline in sales based on consoles with PCFX experiencing a flat line.

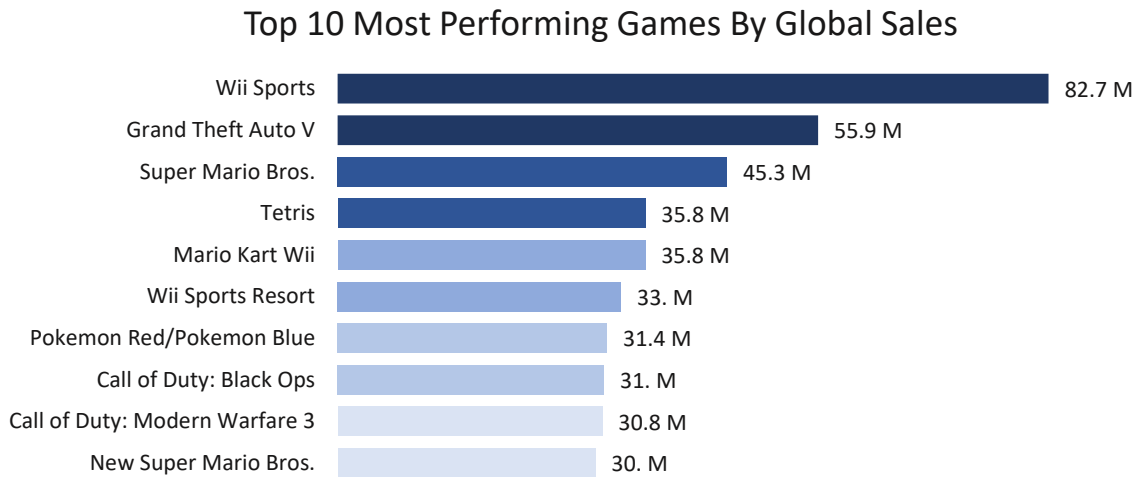
2. Top 10 Genre by Global Sales



Explanation

- The best-selling genre is Action, generating \$1.8B in sales revenue globally. Following up closely is sports, then Shooter and others follow.

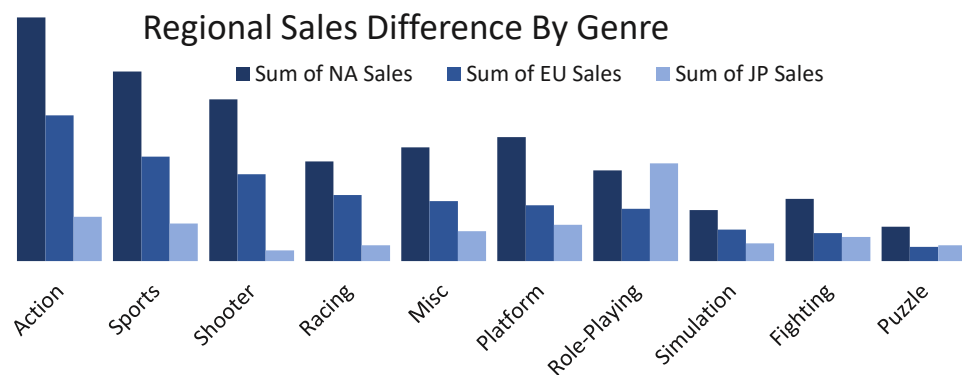
3. Top 10 Most Performing Games by Global Sales



Explanation

- **Best-Selling Game of All Time:** Wii Sports with total sales revenue of \$82.7M. The least-selling game is New Super Mario Bros. with total sales revenue of \$30M

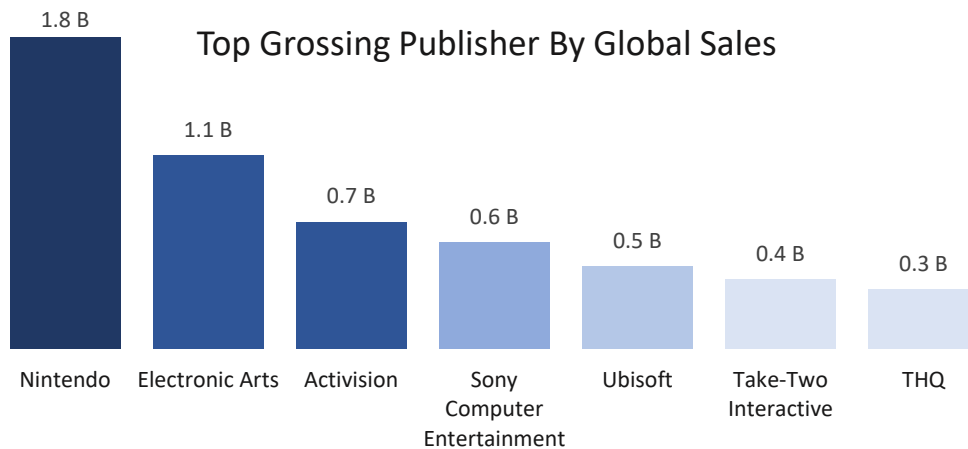
4. Regional Sales Difference by Genre



Explanation

- North America favorite genre are Action, Sports and Shooter games, while for Europe, they are Action and Sports. For Japan, Action does very well. However, the least-performing genre across all regions is Puzzle.

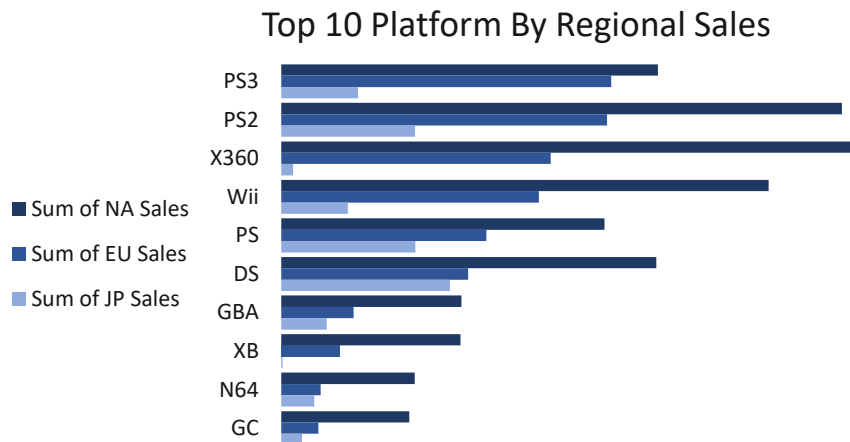
5. Publisher by Global Sales



Explanation

- Nintendo experienced the most success, generating \$1.8B in sales revenue. The least is THQ, generating \$300M in sales revenue

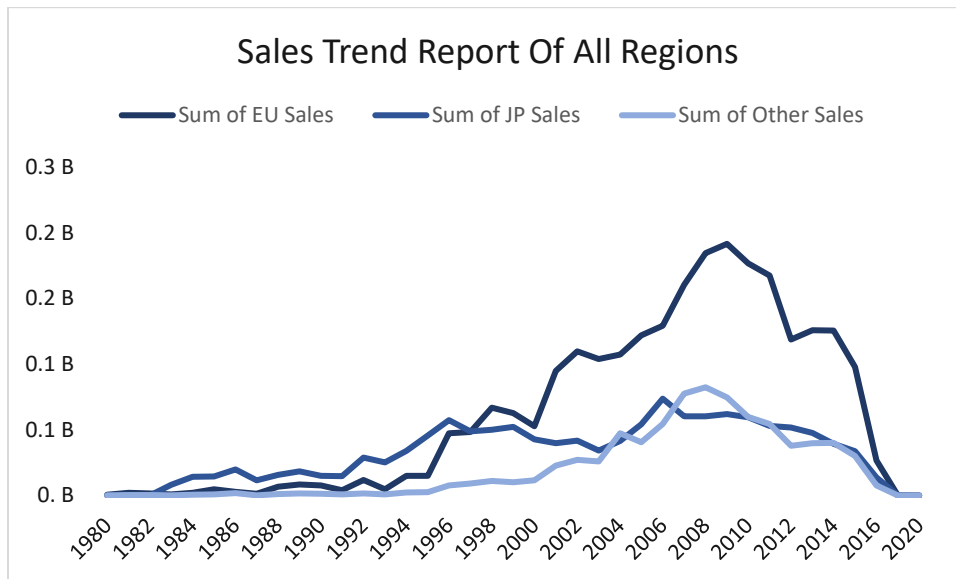
6. Top 10 Platforms by Regional Sales



Explanation

- PS2 had the most success across all the regions, followed by PS3 and Xbox 360. N64 and GC took the last spot

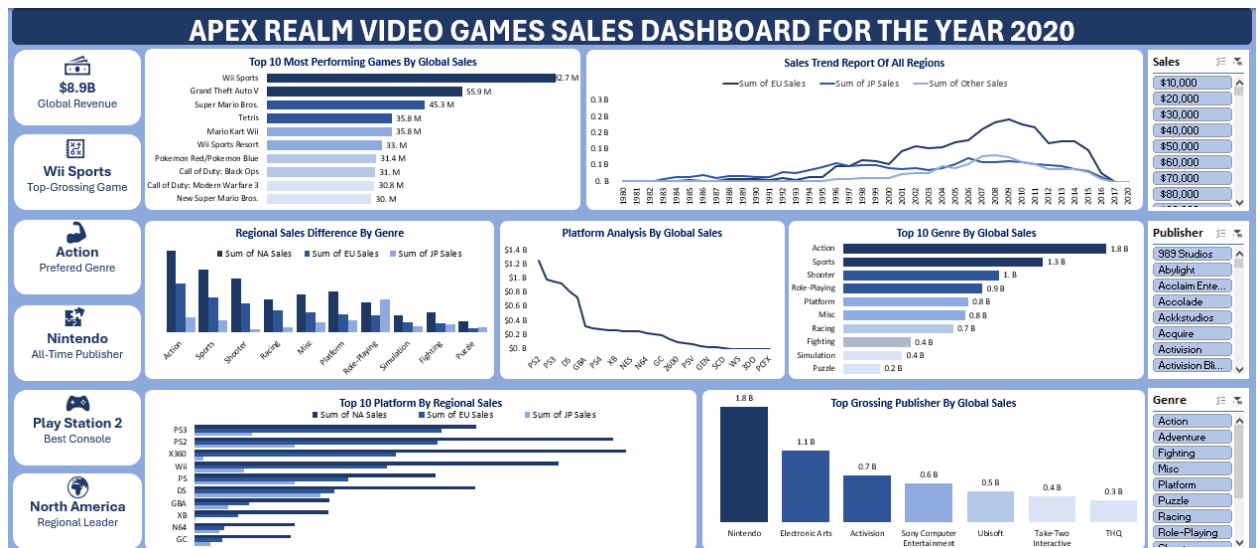
7. Sales Trend Across All Regions



Explanation

- Earlier games between 1980 – 1994 had almost zero sales across all regions. However, games from 1995-2010, had great sales, while recent games published struggled with sales.

8. Dashboard



Recommendations and Observations

Actionable Insights

1. **Reignite the European Market with Targeted Releases:** Since peak sales from 2007-2011 reached \$200M per year, publishers should consider remastering popular titles or reviving genres that performed well during this period. Digital distribution via Steam, PlayStation Store, and Xbox Game Pass could help re-engage the market post-2015, when sales declined to zero.
2. **Revamp Strategy for the Japanese Market:** Given the collapse of console game sales post-2013, developers should focus on mobile and handheld platforms like the Nintendo Switch. Localized RPGs and action-heavy games should receive priority marketing to align with Japan's traditional preferences.
3. **Expand in Emerging Markets Using Digital-First Approaches:** Other regions saw strong sales from 2006-2011 but declined after 2012. A cloud gaming model and regional pricing strategies could help break affordability barriers in these areas.
4. **Modernize Older Titles for Streaming and Digital Platforms:** Pre-1998 games had little traction, but remastering classics for PS Plus, Xbox Cloud, and Switch Online could attract nostalgic gamers.

Optimizations or Business Decisions

1. **Invest in Digital and Subscription Models:** Since sales collapsed after 2012-2015, companies should pivot toward Game Pass-like services, cloud gaming, and cross-platform releases to recover lost audiences.
2. **Leverage AI and Player-Driven Features**
 - **Action:** Introduce open-world storytelling, cross-platform play, and live-service multiplayer updates to sustain player engagement.
 - **Sports:** Implement AI-powered coaching, hybrid AR/VR training, and esports leagues to modernize experiences.

- **Shooting:** Expand into tactical shooters with next-gen AI behaviors and player-created missions.
 - **RPG:** Develop hybrid multiplayer RPGs, AI-generated questlines, and games based on underrepresented mythologies.
 - **Strategy & Puzzle:** Offer crowdsourced challenges, adaptive difficulty, and AI-generated puzzle playlists for long-term engagement.
3. **Expand Genre-Blending and Social Gaming:** Games that mix casual, puzzle, and social mechanics (e.g., Minecraft-inspired sandbox worlds) could attract non-traditional gamers and boost retention.

Unexpected Outcomes

1. Total Collapse of European and Japanese Console Game Sales Post-2012

- This likely resulted from the rise of mobile gaming, economic shifts, and the dominance of free-to-play models.
- Digital distribution platforms (e.g., Steam, Xbox Game Pass) could reintroduce console gaming to these regions.

2. Weak Strategy and Adventure Game Sales Despite Strong Player Interest

- These genres might be thriving outside traditional publisher models, particularly through indie developers and PC-driven sales.
- Introducing cross-platform, touch-optimized versions for mobile and tablets could capture untapped demand.

Conclusion

Key Learnings

1. **European and Japanese Markets Declined Sharply Post-2012:** Sales in both regions dropped to zero, indicating a shift in consumer preferences, platform relevance, or industry trends like the rise of mobile gaming and digital distribution.
2. **Emerging Markets Showed Brief Growth Before Declining:** Sales outside of Europe and Japan surged from 2006-2011 but collapsed after 2012, suggesting a missed opportunity in sustaining engagement through digital-first strategies.
3. **Action, RPG, and Shooting Genres Remain Strong:** Games in these categories continue to perform well, particularly with open-world elements, multiplayer integration, and AI-driven content.
4. **Older Titles Could Be Revived for Modern Platforms:** Pre-1998 games had little sales activity, but remasters and cloud-based access could tap into nostalgic demand.
5. **Digital Distribution and Subscription Models Are the Future:** The post-2012 decline aligns with the industry's shift toward Game Pass-like services, cloud gaming, and cross-platform gaming.

Limitations

1. **Data Coverage Gaps:** The report primarily focuses on regional and genre-based trends, but lacks detailed player engagement metrics, platform breakdowns, and digital vs. physical sales comparisons.
2. **Market Influence Factors Not Fully Explored:** External factors like economic downturns, console market shifts, and mobile gaming competition were not deeply analyzed in correlation with sales trends.
3. **Lack of Granular Data on Player Preferences:** While sales trends highlight broad market movements, deeper insights into why certain games performed well or failed are missing (e.g., player reviews, engagement rates, and monetization effectiveness).

Future Research

1. **Platform-Specific Sales Performance:** Analyzing sales data by console vs. PC vs. mobile could reveal which platforms drive engagement and revenue growth.
2. **Consumer Behavior Trends:** Exploring data on player preferences, playtime, and spending habits could help refine marketing and game development strategies.
3. **Impact of Subscription and Cloud Gaming Models:** Investigating how Xbox Game Pass, PlayStation Plus, and cloud gaming adoption rates influence game sales could provide insights into new revenue opportunities.
4. **Regional Pricing and Affordability Analysis:** Examining price sensitivity in emerging markets could guide better pricing strategies to drive sustained sales.

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