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**BIG DATA WORKFLOWS IN AI – POWERED BUSINESS ANALYTICS**

**(DAT – 1001 – VNA1)**

**FACILITATOR: PROFF. PAVEL PARAMONOV**

**ASSIGNMENT THEME: “AMAZON PRODUCT ANALYSIS”**

**STUDENT NAME: JANE KURI**

**PROGRAM: MASTERS IN MARKETING & ANALYTICS (MIMA)**

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# **Amazon Retail Product Analysis**

## **Introduction**

This analysis of Amazon’s retail data uncovers six key insights that highlight how today’s consumers shop, what they prioritize, and where they are most engaged. By examining top-selling categories, customer review trends, satisfaction ratings, and high-value purchases, we gain a clear understanding of the modern shopper's mindset. The findings reveal a strong emphasis on enhancing the home environment, integrating smart technology into everyday life, and seeking products that support personal well-being and individual interests. These insights not only reflect current consumer values but also provide a roadmap for brands and retailers aiming to align with evolving expectations in a fast-moving digital marketplace.

## **Key Insights and Analysis**

### **1. Top-Selling Product Categories by Monthly Revenue**

*Prompt: What are the top 10 categories with the highest total monthly sales?*

The table and chart below reveals the top 10 categories with the highest total monthly sales, which are: Kitchen & Dining, Hair Care Products, Industrial & Scientific, Household Cleaning Supplies, Skin Care Products, Health & Household, Toys & Games, Home Storage & Organization, Dog Supplies, and Household Supplies.

A screenshot of a sales report

AI-generated content may be incorrect.

A graph of a number of blue bars

AI-generated content may be incorrect.

The analysis of top-selling product categories reveals a strong consumer shift toward enhancing personal well-being, home comfort, and lifestyle enrichment. Consumers are prioritizing cozy, efficient living spaces, as seen in the popularity of kitchenware, cleaning supplies, and home organization tools trends amplified by smaller living areas and minimalist preferences. Personal health remains a key focus, with booming sales in skincare, haircare, and health-related products, especially those with natural, sustainable ingredients. This emphasis on wellness also aligns with a broader eco-conscious mindset. At the same time, niche categories like pet supplies, industrial tools, and games highlight growing investment in hobbies, professional interests, and pet care, driven by increased pet ownership and the trend of treating pets like family. Together, these patterns reflect a consumer market increasingly shaped by comfort, conscious living, and personal passions.

### **2. Highest-Rated Product Categories by Customer Reviews**

*Prompt: What are the top 10 highest-rated categories by average stars?*

This table and chart shows that gift cards have the highest average star rating (4.83), followed by Health & Household (4.57), Industrial & Scientific (4.55), and Kitchen & Dining (4.54). The lowest-rated category among the top 10 is Electronic Components with an average star rating of 4.49.

A screenshot of a computer

AI-generated content may be incorrect.

A graph of a number of items

AI-generated content may be incorrect.

The customer satisfaction trends show that simpler, more practical products consistently earn higher ratings, while complex items tend to receive more mixed reviews. Gift cards top the list with near-perfect satisfaction, thanks to their ease of use and flexibility. Similarly, everyday essentials like health products, kitchenware, and industrial tools score high because they reliably meet basic expectations like quality and durability. On the flip side, categories like electronic components see lower ratings, largely due to their technical complexity and the higher risk of performance issues often caused by subpar materials or unclear product information. Overall, the findings suggest that consumers value straightforward, dependable products and that satisfaction decreases as product complexity and the potential for failure increase.

### **3. Most Expensive Products: Titles and Product IDs**

*Prompts: What are the titles and product IDs of the top 5 most expensive products?*

This table shows the top 5 most expensive products, they are: Overland Storage Neoxl80 (B077BCV1JT), replicas Marinas (B0CJHXQS8R), CISCO Systems 1 Port ATM (B0000516QJ), Cisco Systems 7140 Router (B0000516Q1), and PARTNERS BRAND Corrugated Trash Can (B08XMXFW1Q).

A screenshot of a computer

AI-generated content may be incorrect.

The analysis of the five most expensive products reveals a strong commercial focus on enterprise-level data storage and networking infrastructure, reflecting the priorities of organizations investing in scalability, security, and performance. High-end tech like the Overland Storage NEOxl 80 tape library and Cisco networking hardware dominate the list, underscoring the demand for robust solutions that support large-scale data management and high-speed connectivity. These investments are critical for businesses managing complex IT environments. At the same time, the inclusion of a basic industrial trash can and a high-priced collectible item highlights the diversity of commercial purchasing, where bulk orders, specialized materials, or niche interests can also drive up costs. This mix of advanced technology and practical supplies illustrates the broad range of enterprise needs in both high- and low-tech categories.

### **4. Most Reviewed Products Across Top Categories**

***Prompt: List the top 10 category products from the highest to the least customer review.***

Below is the summary of the top 10 categories by customer reviews: 1. Makeup (346,563 reviews) 2. Vacuum Cleaners & Floor Care (292,474 reviews) 3. Kids' Home Store (281,661 reviews) 4. Smart Home: Security Cameras and Systems (260,659 reviews) 5. Makeup (194,051 reviews) 6. Shaving & Hair Removal Products (183,726 reviews) 7. Headphones & Earbuds (174,524 reviews) 8. Smart Home: Security Cameras and Systems (173,248 reviews)

|  |  |  |
| --- | --- | --- |
|  | **category\_name** | **title** |
| **0** | Makeup | essence | Lash Princess False Lash Effect Mascara | Gluten & Cruelty Free |
| **1** | Vacuum Cleaners & Floor Care | ThisWorx Cordless Car Vacuum - Portable, Mini Handheld Vacuum w/Rechargeable Battery and 3 Attachments - High-Powered Vacuum Cleaner w/ 60w Motor |
| **2** | Kids' Home Store | Queen Size Sheet Set - Breathable & Cooling Sheets - Hotel Luxury Bed Sheets for Women, Men Kids & Teens - Deep Pockets - 4 Piece Set - Soft & Wrinkle Free - Spa Blue Bed Sheets - Queen Sheets - 4PC |
| **3** | Kids' Home Store | Queen Size Sheet Set - Breathable & Cooling Sheets - Hotel Luxury Bed Sheets for Women, Men Kids & Teens - Deep Pockets - 4 Piece Set - Soft & Wrinkle Free - Off White Bed Sheets - Comfy Queen Sheets |
| **4** | Kids' Home Store | Full Size Sheet Set - Breathable & Cooling Sheets - Hotel Luxury Bed Sheets - Extra Soft Sheets for Kids, Teens, Women & Men - Deep Pockets - 4 Piece Set - Comfy - Wrinkle Free - Light Grey Bed Sheets |
| **5** | Smart Home: Security Cameras and Systems | Blink Mini – Compact indoor plug-in smart security camera, 1080p HD video, night vision, motion detection, two-way audio, easy set up, Works with Alexa – 1 camera (White) |
| **6** | Makeup | Maybelline New York Instant Age Rewind Eraser Dark Circles Treatment Multi-Use Concealer, 110, 1 Count (Packaging May Vary) |
| **7** | Shaving & Hair Removal Products | Schick Hydro Silk Touch-Up Exfoliating Dermaplaning Tool, Face & Eyebrow Razor with Precision Cover- 9 Count | Dermaplaning Razor For Women |
| **8** | Headphones & Earbuds | BOAT Airdopes 141 Bluetooth Truly Wireless in Ear Headphones with 42H Playtime,Low Latency Mode for Gaming, ENx Tech, IWP, IPX4 Water Resistance, Smooth Touch Controls (Bold Black) |
| **9** | Smart Home: Security Cameras and Systems | Ring Video Doorbell - 1080p HD video, improved motion detection, easy installation – Satin Nickel |

A graph of a number of people

AI-generated content may be incorrect.

This analysis of the most-reviewed product categories reveals that consumers are highly engaged with items that directly impact their daily routines, personal appearance, and home environments. Categories like makeup, vacuum cleaners, and shaving products generate large volumes of feedback due to their deeply personal use and the strong desire to find the best solutions for grooming and cleanliness. Makeup, in particular, sees intense engagement driven by social media trends and a shift toward natural, skincare-infused products. Likewise, home care items such as robotic vacuums and smart security systems highlight the growing demand for convenience, automation, and safety. Technology-focused items like headphones also see significant engagement, as consumers seek high-performance audio tailored to their lifestyles. Additionally, the popularity of kids' home products reflects parents’ investment in creating nurturing, stimulating spaces for children. Altogether, these trends underscore a consumer base that is not only quality-conscious but also eager to share experiences to influence and inform others.

### **5. Review Distribution and Category Performance Assessment**

***Prompt: Identify which product category needs improvement.***

Below table and chart indicates the top 10 product categories by customer review count, which are led by **Smart Home: Security Cameras and Systems** with 8,035.94 reviews, followed by **Smart Home: Voice Assistants and Hubs** (2,828), **Diet & Sports Nutrition** (2,275.13), **Video Games** (2,147.67), and **Home Décor Products** (2,119.44). Next are **Kids' Home Store** (1,997.19), **Wellness & Relaxation Products** (1,919.8), **Makeup** (1,732.32), and **Televisions & Video Products** (1,479.47). Finally, **Foot, Hand & Nail Care Products** received the fewest reviews at 1,476.35, suggesting this category may require improvement to better engage customers.

A screenshot of a list of numbers

AI-generated content may be incorrect.

A graph of a bar graph

AI-generated content may be incorrect.

The above analysis of the top 10 most-reviewed product categories highlights a strong consumer focus on smart technology, personal well-being, and lifestyle enhancement. Leading the list are smart home security systems and voice assistants, reflecting a growing demand for connected, automated living spaces and real-time safety solutions. Health and wellness products, especially in sports nutrition and relaxation, also draw significant engagement, as more consumers prioritize active, balanced lifestyles. High review volumes in video games, home décor, makeup, and televisions point to strong interest in entertainment, aesthetics, and personalized experiences. Consumers rely heavily on reviews to navigate these emotionally and functionally impactful purchases. In contrast, foot, hand, and nail care products lag in engagement, suggesting untapped potential. Brands in this space could benefit from encouraging user feedback, leveraging social media, and enhancing digital interaction to match the engagement levels seen in more dynamic categories.

### **6. Best-Priced Products Among Top Categories**

***Prompt: List the top 10 category products with the best price seller.***

Here are the top 10 categories with the best price sellers: Smart Home, Heating & Cooling, Camera & Photo, Office Electronics, Kitchen & Dining, Power Tools, Measuring & Layout, Automotive Tools, Tools & Home Improvement, and Automotive Tools. Prices range from $549 to $1499.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Category\_name** | **Title** | **Price** |
| **0** | Smart Home: Other Solutions | Dolphin Nautilus CC Supreme Robotic Pool Vacuum Cleaner with Wi-Fi Control — Wall Climbing Capability — Powerful Waterline Scrubbing — Ideal for In-Ground Pools up to 50 FT in Length | 1499.0 |
| **1** | Heating, Cooling & Air Quality | Senville LETO Series Mini Split Air Conditioner Heat Pump, 24000 BTU 208/230V, Inverter, Works with Alexa, SEER2 18, 2 Ton, White | 1199.99 |
| **2** | Camera & Photo | Sony Alpha ZV-E10 - APS-C Interchangeable Lens Mirrorless Vlog Camera Kit - Black | 798.0 |
| **3** | Office Electronics | Optoma EH412x Professional 1080p Projector | 4,500 Lumens for Daytime Use in Meetings, Training and Classrooms | 15,000 Hour Lamp Life | 4K HDR Input | Built-In Speaker | 794.0 |
| **4** | Kitchen & Dining | Breville Barista Express Espresso Machine, Brushed Stainless Steel, BES870XL, Large | 699.95 |
| **5** | Power Tools & Hand Tools | DEWALT Thickness Planer, Two Speed, 13-inch, 15 Amp, 20,000 RPM Motor (DW735X) | 688.92 |
| **6** | Measuring & Layout | DEWALT 20V/12V MAX Laser Level Kit, 3 x 360, Green (DCLE34030G) | 579.0 |
| **7** | Automotive Tools & Equipment | VEVOR Portable Diesel Tank, 58 Gallon Capacity & 10 GPM Flow Rate, Portable Fuel Tank with 12V Electric Transfer Pump and 13.1ft Rubber Hose, PE Diesel Transfer Tank for Easy Fuel Transportation Black | 556.99 |
| **8** | Tools & Home Improvement | DEWALT 10 Inch Table Saw, 32-1/2 Inch Rip Capacity, 15 Amp Motor, With Rolling/Collapsible Stand (DWE7491RS) | 549.0 |
| **9** | Automotive Tools & Equipment | ChargePoint Level 2 240V Smart Home Flex Hardwire Outdoor Charging Station and Cable for 20-80A Circuit Breaker for Electric Cars, Gray | 549.0 |

A graph of blue rectangular bars with white text

AI-generated content may be incorrect.

This analysis of top-selling products priced between $549 and $1499 reveals that consumers are making thoughtful investments in items that enhance home life, support professional or hobbyist work, and boost personal productivity. High-value categories such as smart home tech, heating and cooling systems, and kitchen and dining essentials reflect a strong desire to improve comfort, efficiency, and lifestyle at home. At the same time, the surge in office electronics signals the continued impact of remote work and the need for optimized home office setups. On the DIY and professional side, robust sales of power tools, measuring equipment, and automotive tools highlight a growing community of skilled users and hobbyists committed to self-reliance and craftsmanship. Additionally, the popularity of high-end cameras and photo gear points to rising interest in content creation, where quality and performance are key. Overall, this pricing tier captures a consumer market willing to spend more on long-lasting, functional products that offer real value in both personal and professional contexts.

## **Summary**

An integrated look at Amazon’s retail data paints a clear picture of the modern consumer: they are intentional, quality-driven, and focused on improving their overall lifestyle through three main avenues, enhancing their home, integrating technology, and prioritizing personal well-being. The home has emerged as the central hub of investment, with consumers pouring money into comfort, organization, and functionality, as seen in categories like Kitchen & Dining and Tools & Home Improvement. Technology plays a dual role as both an enabler and a necessity, with Smart Home devices leading in both sales and reviews, though consumer satisfaction hinges on simplicity and reliability. Meanwhile, personal wellness and self-expression continue to drive high engagement in beauty, skincare, and nutrition, while hobbies from pet care to gaming highlight a desire for meaningful, customized experiences. Gift Cards, with their top satisfaction ratings, represent the ultimate in flexible, personalized shopping. Altogether, today’s Amazon shopper is thoughtful and digitally fluent, investing in products that elevate their home life, streamline daily routines, and support personal passions. For brands, this means delivering dependable, relevant solutions that align with a lifestyle-centered, tech-savvy, and wellness-focused consumer mindset.

# **Venna AI: SQL & Prompt Reference;**

1. What are the top-10 categories with the highest total monthly sales?

SELECT category\_name, SUM(boughtInLastMonth) as total\_sales FROM `hultaibigdata.retail\_products.products` GROUP BY category\_name ORDER BY total\_sales DESC LIMIT 10

1. What are the top-10 highest rated categories by average stars?

SELECT category\_name, AVG(stars) as avg\_stars FROM `hultaibigdata.retail\_products.products` GROUP BY category\_name ORDER BY avg\_stars DESC LIMIT 10

1. What are the titles and product IDs of the top-5 most expensive products?

SELECT title, product\_id FROM `hultaibigdata.retail\_products.products` ORDER BY price DESC LIMIT 5

1. List the top 10 category products from the highest to the least customer review

SELECT category\_name, title, reviews FROM `hultaibigdata.retail\_products.products` ORDER BY reviews DESC LIMIT 10

1. I interpreted your question as: List the top 10 category products from the highest to the least customer review, and identify which product category needs improvement.

SELECT category\_name, AVG(reviews) AS avg\_reviews FROM `hultaibigdata.retail\_products.products` GROUP BY category\_name ORDER BY avg\_reviews DESC LIMIT 10

1. List the top 10 category products with the best price seller

SELECT p.category\_name, p.title, p.price FROM `hultaibigdata.retail\_products.products` AS p WHERE p.isBestSeller = TRUE ORDER BY p.price DESC LIMIT 10

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