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| RAZDA Co. | | |
| **Filename: [analytics\_report.py]** | | |
| **Summary***:*  This file automates the generation of analytical reports, providing insights into sales trends, user engagement, and market behavior over specified periods. It integrates data from other modules and includes visualization, summary generation, and critical alerting functionalities for essential metrics. | | |
| ***Processes*** | | |
| * **Report Date Range Calculation** | **Sets the date range for reports based on the type (daily, weekly, or monthly), supporting flexible reporting periods.** | |
| * **Data Retrieval** | **Fetches and aggregates sales data, user engagement metrics, and market trend information.** | |
| * **Data Aggregation & Summarization** | **Organizes and summarizes data by key metrics such as total sales, top categories, and average session duration.** | |
| * **Visualization Generation** | **Creates visual representations for each data type, saving charts for sales, engagement, and trends.** | |
| * **Critical Metrics Check** | **Evaluates if essential metrics meet thresholds, triggering alerts for low performance in key areas.** | |
| * **Report Compilation** | **Compiles the data, visualizations, and insights into a complete report for admin review and decision-making.** | |
| **Files it Gets Information From:** | | **Files it Sends too:** |
| * **Environment Variables** (dotenv): For date settings and thresholds | * **Reports Folder** (reports/): Stores generated visualizations as PNG files. | |
| * **Data Logger** (data\_logging.py): Retrieves sales data for report period. | * **Alert Automation** (alert\_automation.py): Triggers alerts if critical metrics fall below thresholds. | |
| * **Site Analytics** (site\_analytics.py): Fetches engagement and market trend data. | * **Log File** (analytics\_report.log): Logs data retrieval, summary generation, and visualization details. | |
| **Expected input into file:** | | **Expected output from file:** |
| **Report Type**: Defines report frequency (e.g., daily, weekly, monthly).  **Date Range**: Automatically calculated based on report type to fetch relevant data.  **Sales, Engagement, and Trends Data**: Data fetched from other modules based on date range.  **Thresholds for Alerts**: Minimum metrics required for certain aspects, triggering alerts if unmet. | | **Report Summary**: Outputs a dictionary summarizing key findings like total sales and top categories.  **Visualization Files**: Saves sales, engagement, and trends charts in PNG format within the reports directory.  **Log File Entries**: Logs all key activities such as data fetch, visualization, and alerts for later review.  **Alerts**: Sends notifications if critical metrics (e.g., sales) fall below defined thresholds. |
| **Things that need to be taking place:** | | |
| |  | | --- | | **● Accurate Data Retrieval: Continuously fetch the latest data from data\_logging.py and site\_analytics.py within specified date ranges for relevant insights.** |  |  | | --- | | **● Regular Visualization Updates: Ensure charts are generated and saved for each reporting period, with clear visuals for easy trend analysis.** |  |  | | --- | | **● Threshold Checks for Alerts: Monitor and enforce threshold settings to trigger alerts, especially for significant declines in sales or engagement.** |  |  | | --- | | **● Comprehensive Summary Generation: Create meaningful report summaries with key takeaways, making it easier for admin users to identify trends and action points.** |  |  | | --- | | **● File and Log Management: Maintain logs for tracking report generation, data issues, and triggered alerts for future troubleshooting or auditing purposes.** |  |  | | --- | | **● Error Handling and Logging: Log any errors encountered during data fetching, processing, or report generation for seamless issue tracking and resolution.** |  |  | | --- | |  | | | |
| Edit log (update each time you make changes to doc or file). | | |
| **Contribution to the Entire Project:**  The **analytics\_report.py** file provides essential insights into market performance, user engagement, and trends, supporting data-driven decision-making at Razda Market. By automating the reporting process, it enables periodic analysis of key metrics, enhances visibility into operational effectiveness, and offers timely alerts on critical metrics. This automated reporting is essential for informed strategic planning, helping the team quickly identify areas needing improvement.  Let me know if there’s another file you’d like to proceed with or if you need further assistance on specific details. | | |
| Oliver Smith (Razda Admin) Nov 8, 2024: Created the analytics report structure, integrating data sources and alert mechanisms, and setting up visualizations. | | |