CrowdWisdomTrading n8n + AI Agent

Intern position assessment1.

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1. Project Overview

This project is a real-world marketing automation assignment designed to evaluate both technical capability and creative problem-solving. The goal is to build a fully automated workflow using n8n that captures competitor data, analyzes top-performing social media content, and generates optimized advertising scripts and summaries tailored for CrowdWisdomTrading.

The workflow integrates web scraping, data processing, and AI-driven analysis to reduce manual research time and support data-driven decision making for marketing strategy.

2. Workflow Architecture

n8n Workflow Steps

1. **Trigger –** Starts workflow manually or via scheduled execution
2. **Google Sheets (Get Rows) –** Fetches competitor list
3. **Split In Batches / Item Splitter –** Processes competitors one by one
4. **Apify Actor Run –** Scrapes social content & viral videos
5. **JavaScript Code Node –** Filters performance metrics & selects best video
6. **LLM Analysis Node –** Video analysis using Gemini/OpenRouter
7. **AI Agent (Generate Answer)** – Produces formatted summary + ad script
8. **Code Node –** Parses AI JSON into clean fields
9. **Google Sheets (Append Row) –** Stores output back to sheet
10. **Slack Alerts (Optional) –** Sends error messages for monitoring

4. Tools & Technologies Used

I.	Tool / Service	Purpose
II.	n8n	Core automation engine for workflow orchestration
III.	Google Sheets	Input and output database
IV.	Apify	Scrapes competitor profiles and video metadata
V.	OpenRouter/GeminiAI	Analyzes video content and generates structured insights
VI.	JavaScript (n8nCodeNode)	Data cleaning and transformation
VII.	Slack	Optional integration for real-time error alerts

5. Workflow Explanation (Step-by-Step)

Step 1 – Trigger
The admin starts the workflow manually or schedules it daily for automated analysis.
Step 2 – Retrieve Competitors
Google Sheets node pulls the list of competitor names, limited to 5 for the assessment.
Step 3 – Split Items
Ensures that each competitor is processed one at a time to avoid data collisions.
Step 4 – Apify Scraper Run
Apify retrieves:

- Top recent posts
- Engagement metrics
- Video URLs
- Performance indicators

Step 5 – JavaScript Node
Filters and selects the highest-performing video based on:

- Likes
- Views
- Comments
- Engagement rate

Step 6 – Video Analysis Using AI
Gemini/OpenRouter model evaluates:

- Content theme
- Hook effectiveness
- Target audience
- Emotional tone
- Marketing potential

Step 7 – Generate Final Summary & Ad Scripts
AI agent returns:

- Competitor summary
- Video insights
- HTML-formatted summary
- 3 advertising script versions
- SEO caption suggestions

Step 8 – Parse JSON to Clean Fields
A Code node extracts values and prepares final row data.
Step 9 – Append Row to Google Sheets
The output is added to the master competitor insights sheet.
Step 10 – Optional Monitoring
Slack alerts are triggered if:

- Apify fails
- No videos found
- AI output returns invalid JSON

6.Challenges & Solutions

	Challenge	Solution
i.	Google Sheets not updating	Rebuilt column mapping; added JSON parsing code node
ii.	Apify scraper slow	Modified actor settings to lightweight mode
iii.	AI response formatting inconsistent	Forced strict JSON output and validated with try/catch
iv.	Workflow looping repeatedly	Configured “Split In Batches” and returned proper exit values
v.	Incorrect data types in Sheets	Ensured all returned values were text, not objects

7.Conclusion

This project demonstrates the ability to design a production-ready automation system using n8n, AI models, and third-party scraping services. The workflow successfully automates competitor research and content analysis, reducing manual work and enabling data-driven marketing strategies.
Through this assignment, the skills demonstrated include:

- Workflow orchestration
- API integration
- AI prompt engineering
- Debugging automation failures
- Data transformation using JavaScript
- End-to-end marketing intelligence automation