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General Motors: Supplier Selection for Innovation - 4/13/2026

AI Check

General Motors (GM) needs to choose a supplier to provide the electronic brake booster for the Chevrolet Bolt EV.
There are four suppliers in analysis, including Rosie Automotive, Elroy, R.U.D.I., and Orbitty.
GM assumes a projection of 30,000 units every year, a five-year project life cycle, weekly delivery, 235 days per year of production, and a cost of capital of 15% is used in the analysis (Yan et al., 2017).
In this case study analysis, a quantitative evaluation of suppliers is subsequently followed by qualitative factors, and lastly, a combined recommendation is made in a scorecard approach.

In the case of only quantitative considerations, the decision majorly focuses on cost efficiency.
This incorporates unit price, logistics, and holding cost of inventory.
GM has a target price of $43 per unit, and the e-boost module is identified as the EV version, whereas the target price of the AV version is $53 per unit (Yan et al., 2017).
The cost of logistics is also increased by the distance of shipping and the customs process of the overseas suppliers.
The cost of holding inventory is estimated to be 10% of the unit manufacturing cost per year, which is in line with industry practice.
It is estimated that the EV and the AV will produce 30,000 units and 10,000 units, respectively, each year.
All the calculations are based on the weekly production of 638 units and 47 working weeks each year, as demonstrated in the data provided.
In Table 1, the summative quantitative expense of every supplier is summarized.

The findings indicate clearly that Elroy has the minimum total cost at $41,368.19.
This is mainly because it has a low unit price of $44.25, and its inventory cost is not very high.
There is also a low rate of taxes and duties that Elroy incurs since the production is in Mexico, where the duty rate stands at 0.80%.

The summative price of Rosie is the most expensive, with a middle unit price primarily due to the high inventory charge and transportation out of China.
Due to high duties, a longer transit period, and an expensive inventory, Orbitty is more costly than Elroy.
is also high due to its high unit cost.
According to the quantitative evaluation only, Elroy should be chosen, as it represents the lowest total cost and the most efficient cost structure.

The decision becomes different when qualitative factors are considered.
The main qualitative criteria are the ownership of intellectual property, technical ability, supply risk, customer service, and the strategic fit with the long-term autonomous vehicle objectives of GM.
These aspects are paramount since in autopilot driving, the brake system is directly correlated with safety and software implementation.
Rosie Automotive International is doing well in terms of manufacturing experience and cost efficiency, but does not offer intellectual property to GM (Yan et al., 2017).
It is a major drawback as GM has mentioned that software, data, and system behavior control are strategic in nature.
Rosie Automotive International is also proposing the price to be increased following changes in the engineering, and this is worrisome as to the reliability and trust in the long run.

Elroy International has an opposite supplier profile with its advantages and obvious weaknesses.
It shares intellectual property, and the company is in Mexico, which lessens logistics risk compared to foreign suppliers (Yan et al., 2017).
Elroy, however, has little experience with the braking system and highly depends on purchased parts by Orbitty.
It lowers the visibility between GM in the entire supply chain and generates uncertainty as to system integration and long-run performance.

Braking Systems possesses good technical credibility with GM.
It has been able to produce prototype systems of the Chevrolet Bolt AV and cooperated with GM engineers throughout the development (Yan et al., 2017).
It is located in the United States, which lessens the line of supply and enhances communication.
does not feel free to share intellectual capital in the short term, and it is slightly strategic (Yan et al., 2017).
The company has been willing to collaborate in the future as soon as GM develops internal expertise.

Orbitty International is known as one of the industry front-runners in autonomous vehicles.
It is also ready to sell intellectual property, but at a high price (Yan et al., 2017).
It has a high level of technical power and innovation.
Orbitty has, however, a reputation for bad customer relationships and is seen to be challenging to do business with.
It is also expensive and manufactured abroad, thus making it risky.
are the strongest, due to operational trust and collaboration.
The lowest-ranking company is Rosie Automotive International because it has restrictions in terms of intellectual property.

The last supplier decision is arrived at after an evaluation of the quantitative cost analysis and the qualitative assessment of the strategic factors.

Based on the quantitative analysis, Elroy International has the lowest cost of the total project life cycle, despite its low unit price, as well as moderate inventory costs and logistics costs.
Nonetheless, the price is not a critical requirement of a safety-critical component employed in an autonomous vehicle.
The ranking of suppliers is also different when qualitative factors are also incorporated, such as intellectual property control, technical maturity, supply reliability, and quality of relationships (Wu-Smith et al., 2023).
According to Table 2.
Braking Systems has the highest total score, although it is not the cheapest option.
This finding can be attributed to the greater weight attributed to technical capability and supply risk, which are critical to autonomous braking systems.

is suggested to be the last supplier since it offers the most favorable performance/risk/long-term strategic fit.
Its success in the development and testing of prototype systems with the Chevrolet Bolt AV makes it less risky in terms of technical and safety hazards.
Domestic production also enhances responsiveness and communication, which are essential in the initial production and refining of the system (Scott, 2022).
is not willing to share intellectual property within the short term, its readiness to do so in the future will support the long-term innovation priorities of GM.
provides the most defensible and stable option to GM compared to Elroy, which is cheaper but has high uncertainty in technical factors, or Orbitty, which is highly innovative, high-cost, and service-risk.

The choice of the supplier for the Chevrolet Bolt EV braking system cannot be solely based on the cost factor.
The ultimate action should safeguard the safety, minimize risk, and take care of GM's long-term strategy of innovation.
Elroy, though the cheapest, does not have as good technical confidence and operational reliability as R.U.D.I.
An alternative assessment demonstrates that their first consideration is performance, teamwork, and risk management, which is more sustainable and justifiable in sourcing decisions.

FAQs

What is GPTZero?

GPTZero is the leading AI detector for checking whether a document was written by a large language model such as ChatGPT. GPTZero detects AI on sentence, paragraph, and document level. Our model was trained on a large, diverse corpus of human-written and AI-generated text with support for English, Spanish, French, German, and other languages. To date, GPTZero has served over 17 million users around the world, and works with over 100 organizations in education, hiring, publishing, legal, and more.

When should I use GPTZero?

Our users have seen the use of AI-generated text proliferate into education, certification, hiring and recruitment, social writing platforms, disinformation, and beyond. We've created GPTZero as a tool to highlight the possible use of AI in writing text. In particular, we focus on classifying AI use in prose. Overall, our classifier is intended to be used to flag situations in which a conversation can be started (for example, between educators and students) to drive further inquiry and spread awareness of the risks of using AI in written work.

Does GPTZero only detect ChatGPT outputs?

No, GPTZero works robustly across a range of AI language models, including but not limited to ChatGPT, GPT-5, GPT-4, GPT-3, Gemini, Claude, and AI services based on those models.

What are the limitations of the classifier?

The nature of AI-generated content is changing constantly. As such, these results should not be used to punish students. We recommend educators to use our behind-the-scene Writing Reports as part of a holistic assessment of student work. There always exist edge cases with both instances where AI is classified as human, and human is classified as AI. Instead, we recommend educators take approaches that give students the opportunity to demonstrate their understanding in a controlled environment and craft assignments that cannot be solved with AI. Our classifier is not trained to identify AI-generated text after it has been heavily modified after generation (although we estimate this is a minority of the uses for AI-generation at the moment). Currently, our classifier can sometimes flag other machine-generated or highly procedural text as AI-generated, and as such, should be used on more descriptive portions of text.

I'm an educator who has found AI-generated text by my students. What do I do?

Firstly, at GPTZero, we don't believe that any AI detector is perfect. There always exist edge cases with both instances where AI is classified as human, and human is classified as AI. Nonetheless, we recommend that educators can do the following when they get a positive detection: Ask students to demonstrate their understanding in a controlled environment, whether that is through an in-person assessment, or through an editor that can track their edit history (for instance, using our Writing Reports through Google Docs). Check out our list of several recommendations on types of assignments that are difficult to solve with AI.

Ask the student if they can produce artifacts of their writing process, whether it is drafts, revision histories, or brainstorming notes. For example, if the editor they used to write the text has an edit history (such as Google Docs), and it was typed out with several edits over a reasonable period of time, it is likely the student work is authentic. You can use GPTZero's Writing Reports to replay the student's writing process, and view signals that indicate the authenticity of the work.

See if there is a history of AI-generated text in the student's work. We recommend looking for a long-term pattern of AI use, as opposed to a single instance, in order to determine whether the student is using AI.