Can LLMs replace a business analyst?

INTRODUCTION

BI tools don't support open-ended queries, but with the advancement of Large Language Models (LLMs), natural language based interfaces can help business users run data queries from their communication tools such as Slack itself. This can significantly improve data based decision-making in organizations. However, we are not sure whether such tools will work accurately, and if the business users are going to trust them.

AND, THE SUCCESS RATE IS...

We found that LLM SQL query generation for real business use cases such as querying sales data was 75% successful. The query did particularly well on continuous variables, and with aggregate and filter functions. However, we had to reengineer the prompt to handle "categorical variable" better.

Further, most users showed comfort in asking questions, and trusting the results once the Slackbot got 2–3 right answers and built initial trust.

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OBJECTIVE

This research tries to answer the following questions:

(a) will business users' actually trust a natural language query based system to make decisions, and

(b) what are the querying/exploration limitations of such a tool?

RESULTS/FINDING

These results are based on the queries run by the research team and the interviewees who were business users. However, there can be some bias in data because of limited user set. We are expanding our interview pool further.





METHODOLOGY

approach where we:

queries from Slack.

expect such a tool to do.

To understand this, we are using a Praxis

1. Created a tool that users can ask data

2. Analyzed queries run, to understand

accuracy and potential limitations.

3. Informal interviews with users on how

their experience was, and what they





You can continue chatting or click here to explore further in our dashboard.

OTHER FINDINGS

A mock of the

DashQueries bot that

users interacted with.

Engineering the prompt correctly matters, fixing the prompt to understand categorical variables and id variables variables better helped improve accuracy.

CONCLUSION

LLMs are able to do a decent job of generating SQL query with prompt

TRY

What kind of errors did the bot produce?

Making assumptions

Will the users trust the bot?



n = 24/61

Top comments from interviewees – positive & constructive.

"Love it! Super simple, yet super powerful! Especially helpful for business users who want to focus on their work"

"This can be a first line of defense for any data analyst team. Can kill 80% of their backlog."

"This is really going to eliminate my job."

– A data analyst

Depends on how accurately it answers the questions and produce results.



n = 12

The LLM was able to generate some decent assumptions for representing vague queries (67% satisfaction) and handling dates as a unique case.

Getting feedback on whether the bot produced the correct result built trust with the user. Need to see whether that can help improve accuracy of the query generation. based on schema and a few rows of data. However, the chances that it will get a query right is roughly 75%. We still need to test if that's good enough and what changes do users' expect in such an interaction.

Further, we need to test how the bot performs on some production databases. We are doing POCs on some real company data.

	Richa Verma 11:04 AM @DashQueries tell me which city has the most opportunities in last 1 year?	
	DashQueries APP 11:05 AM Runnin' the numbers, gimme a sec	
Alexander Keat 2:21 PM @DashQueries can you tell me the top 3 most effective marketing methods?	11:05 Here's the answer I got:	
DashQueries APP 2:21 PM whipping it up for you Vector Vector	Mumbai 12487	
DashQueries APP 2:22 PM Here's the answer I got:	And the SQL I used:	
b2b_sales_medium total_sales_velocity		R Richa Verma 2:11 PM
Marketing 1687837 Enterprise Sellers 1472776 Partners 142171	<pre>SELECT city, count(*) as total_opportunities FROM sales_data WHERE last_updated_date > (CURRENT_DATE - INTERVAL '1 YEAR') GROUP BY city OPDER PX total_opportunities_DESC_NULLS_LAST</pre>	CoshQueries number of clients whose revenue is greater than a million DashQueries APP 2:11 PM Runnin' the numbers, gimme a sec I think I found something, hold on getting it for you
And the SQL I used:	LIMIT 1;	Quick tip: Do you know you can ask me about a particular account or any
	Which basically means this in plain English:	averages/counts/etc.? The more specific you will be the better the answer. If I am not able to give you a good answer, you can always reach out to Molly, your paliable data applyst!
SELECT b2b_sales_medium, SUM(sales_velocity) as total_sales_velocity FROM sales_data GROUP BY b2b sales medium	This query will determine the city with the most opportunities in the last year. The query will look at the last updated date for each opportunity, and then	Here's the answer I got:
ORDER BY total_sales_velocity DESC NULLS LAST LIMIT 3;	that have been updated within the last year.	count 5288
Which basically means this in plain English:	Are you satisfied with this answer? Yes No	And the SQL I used:
This query will find the top 3 most effective marketing methods by summin the sales velocity for each method and sorting them in descending order.	ng up	SELECT COUNT(*) FROM sales_data WHERE client_revenue_sizing = 'More than 1M';
Are you satisfied with this answer? Yes No		<pre>SELECT COUNT(*) FROM sales_data WHERE client_revenue_sizing ILIKE 'More than 1M';</pre>
	Alexander Keat 2:21 PM @DashQueries can you tell me the top 3 most effective marketing methods? DashQueries RM 2:21 PM whipping it up for you DeshQueries RM 2:22 PM Here's the answer I got: DashQueries Sellers 1687837 Enterprise Sellers 1472776 Partners Marketing SELECT b2b_sales_medium, SUM(sales_velocity) as total_sales_velocity FROW BY b2b_sales_medium ONDER BY total_sales_velocity DESC NULLS LAST LIMIT 3; Which basically means this in plain English: This query will find the top 3 most effective marketing methods by summing the sales velocity for each method and sorting them in descending order. Are you satisfied with this answer? Yes No	Accounder Kest 221PM @DashQueries WF 222PM whyping it up for you DashQueries WF 222PM whyping it up for you Stellars in James it us and it is an even of the save of