Proactive Insight Engines

AI Copilots vs Insight Engines:

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Proactive insight engines are the way forward

Current generative-AI "copilots" for business intelligence promise instant answers to any data question. However, most remain reactive. They wait for users to craft a prompt, submit it, and interpret the reply.

Our research reveals that this reactive model embeds three structural weaknesses:

1. Prompt friction limits reach.
Non-specialists struggle to ask the right questions.

2. Every prompt introduces latency.
The "question-to-insight" cycle time in copilot workflows is too slow for a modern, dynamic marketplace.

3. Delayed or missed insight carries a measurable financial penalty.
For high-velocity businesses, each hour of insight delay results in a 0.8–1.3 basis point reduction in quarterly operating margin..

The paper contrasts this reactive paradigm with proactive insight engines. These systems continuously ingest live data, detect anomalies, rank them by impact, explain "why," and push personalized briefs to decision-makers. Firms that adopt push-based insight models will have faster decision cycles and operational efficiency gains.

Enterprises should evolve from "ask-and-answer" toward "anticipate-and-decide" architectures, pairing instant streaming insights with user-feedback loops to deliver timely, unbiased, and actionable intelligence.
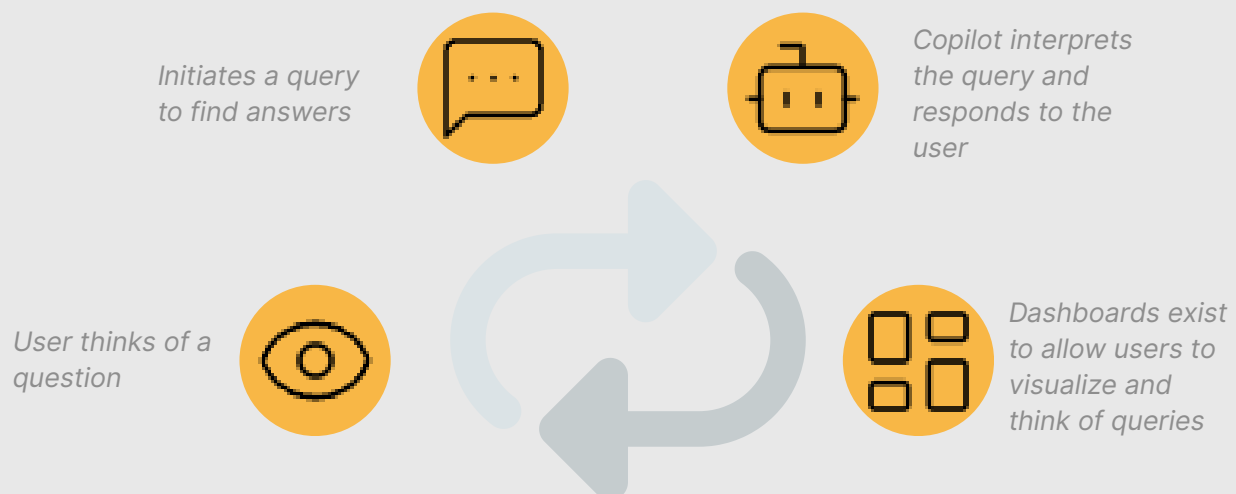
46% *Only forty-six percent of non-specialists can form effective analytical prompts and expert queries.*

6.3 hrs *Median "question-to-insight" cycle in copilot workflows is more than six hours.*

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What is a Business Intelligence Co-pilot?

A copilot is a conversational, AI-powered assistant that boosts productivity by offering contextual help, automating routine tasks, and analyzing data **after the user types a prompt.**

Initiates a query to find answers

Copilot interprets the query and responds to the user

User thinks of a question

Dashboards exist to allow users to visualize and think of queries

LOOP UNTIL INSIGHT

No insight is possible until a prompt exists or the user has a question. The user has to go through several rounds in the loop to get to an insight.

The Co-Pilot model has four key flaws

One of the most striking indictments from our survey on analytics was the fact that more than **83% of the business leaders we talked to found their dashboards hard to manage and ineffective.** Feedback reveals that having a more intuitive way to approach gathering insights is likely to improve business velocity and add value.

The co-pilot model does bring in several benefits over using dashboards, reports, and queries by allowing users the ability to ask questions in natural language. One ThoughtSpot commissioned study by Forrester estimates that having a copilot for Business Intelligence reduces report generation by 70% and improve speed of decision making by 95%.

But it has several key flaws that prevent it from being a true step change in business decision making.

ANALYTICAL & PROMPT LITERACY	Leveraging the copilot model demands users know a) what problem statements to explore b) what questions to ask and c) how do I break down my high order question into effective prompting.
Dashboard sprawl and querying amplifies two threats: 1) "bad-news" charts and 2) Cognitive effort to hunt-and-peck, nudging executives to postpone the activity altogether.	**INFORMATION AVOIDANCE**
DECISION FATIGUE	Every extra click/query consumes scarce executive will-power. Reactive copilots front-load significant cognitive cost on the executive.
While copilot models do make existing analytical teams more efficient, leaders, managers, and decision makers still go through a back-and-forth across teams to arrive at validated, proven insights.	**BACK AND FORTH INTERROGATION**

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Twenty-two percent of knowledge workers (even in data-rich firms) say they "often" avoid available information that might be useful.

Even state-of-the-art copilots depend on users who (a) can phrase a precise question and (b) can verify an answer that may be wrong. It's designed to make the cycles of business intelligence teams more efficient. However, it does not make it easier for business leaders to make rapid decisions as it continues to demand specialized probing skills.

When leaders must pull insight actively, they start to dodge the data. On the whole, this results in continued delegation to specialized teams and addition to the procrastination towards beginning the journey to get to the insight that would lead to action.

The value of insights in modern businesses begins to evaporate by the hour. One MIT study found that companies in the top quartile of "real-time-ness" in terms of insights delivered **62 % higher revenue growth** and **97 % higher profit margin** than the bottom quartile, after industry controls.

>30%

of participants in lab work published in Journal of Risk & Uncertainty prefer to stay uninformed when acting on the information might create anticipated regret.

Prompt Success Rate

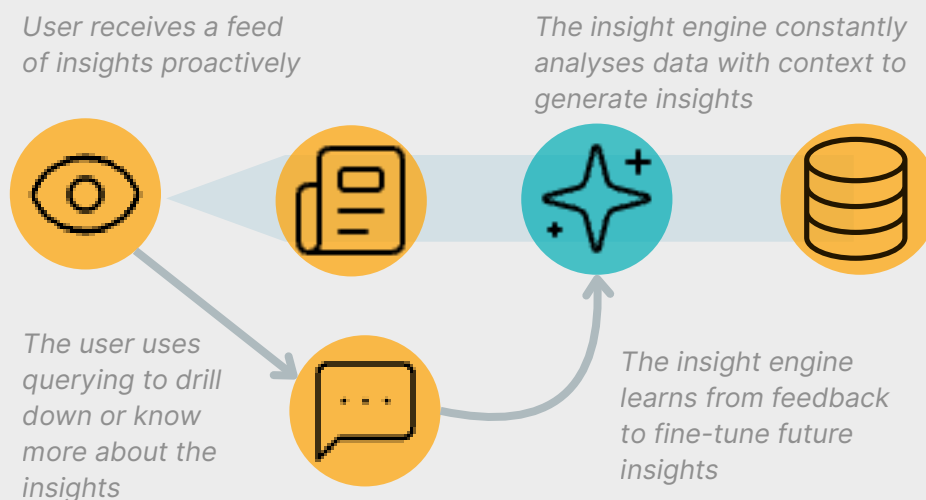% times when users successfully get the desired outcome through prompting

100 —

78%

43%

0 —

Power user **Avg. Business User**

Source:

BI BABBAGE INSIGHT
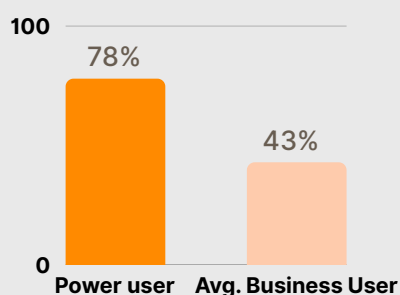
What is an Insight Engine?

An insight engine **pushes evidence-backed insights and stories to decision maker without waiting for them to ask**. It's proactive, opinionated, and does not rely on the ability of the prompter to ask the right questions.

User receives a feed of insights proactively

The insight engine constantly analyses data with context to generate insights

The user uses querying to drill down or know more about the insights

The insight engine learns from feedback to fine-tune future insights

PROACTIVE INSIGHT DELIVERY

Rank-ordered insights get pushed to users, removing the cognitive friction of seeking insights. Users can then choose to drill further as required.

The shift to
Feed-based Insights

Copilots give a conversational face to the existing pull paradigm of dashboards and reports. Insight engines swap the paradigm entirely from "ask me" to "I'll tell you."

Businesses increasingly expect real-time insights pushed to them. In response, the market is increasingly pivoting towards more streaming analytics and feeds. Gartner called out continuous intelligence as one of the top strategic technologies that will share how organizations consume and respond to business events.

64%
executives said embedding real-time analytics directly in workflows increased their agility and responsiveness

+42%
decision velocity at firms that replaced exec dashboards with daily feed emails.

-30%
analyst report prep hours in year one after mobile feed rollout

3x
higher retention of business users to feed UI compared to a self serve BI tools

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Insight Engines outperform Copilots

Firms in the top quartile of real-time business maturity saw a **4× increase in frontline data consumption**, along with **20% higher innovation output** and **22% greater operational efficiency** compared to their peers. These gains were driven by continuous, role-relevant access to live insights.

— MIT CISR, 2024: Real-Time Businesses Survey

Copilots

Initiation friction: The user initiates the conversation and insight hunt by asking a question or starting a prompt. There is risk of blind spots as unasked questions remain invisible, leading to opportunity loss.

Cognitive Load: The user is required to not only craft questions and follow-ups but also to interpret and link individual responses into a coherent narrative.

High Latency: Time to insight in hours as it involves multiple prompts and sometimes teams.

Insight Engines

Zero Prompt Start: An AI insight engine ingests live data, detects statistically significant shifts, and ranks them by impact before any human acts. It is proactive and doesn't need the user to think of the right question and cross the high-friction chasm of prompting for insights.

Contextually ranked stories: Anomalies and patterns are grouped to create contextual stories that are true insights for the decision maker. There is no tunnel vision of trying to group lower order insights into a larger, decision-driving insight.

Real time: Insights in real-time as the insight engine continuously monitors key metrics and surfaces insights as they appear.

Inside a proactive insight engine

Stream: The insight engine proactively monitors new transactions and changes in metrics. This prevents insight gaps between dashboard reviews or report refreshes and allows emerging issues to be spotted quickly.

Detect Insights: It flags statistically unusual movements and meaningful trends. Anomalies or interesting change trends are identified quickly. Patterns are placed in context to derive insights that would be truly relevant.

Explain: Insights and vetted numbers are translated into plain-language "what + why + now what" type narratives that are relevant for decision makers. Saves reading time and removes the need to craft prompts. The engine automatically uses the right visual representation to drive home the insight.

Personalize: Learning from each user's needs and judgment of the insight quality, the engine uses feedback to personalize the ranking of future insight stories.

Rank Insight: Insights are ranked to reduce cognitive load and prioritize for high impact using potential business value and size of impact.

Consume Insight: Attaches the underlying query, data slice, and source traceability for the insight. Business users can both "show the work" as well as audit the logic for how the insights were derived.

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There's a quantifiable upside to Insight Engines

Moving from a BI/Copilot model to an insight engine leads to a decision-velocity transformation with measurable business outcomes.

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Even under conservative assumptions, the insight engine pays back rapidly while increasing compounding operational leverage over time.

Insight engines impact positively across all four key dimensions that executives consistently called out as critical for success

#1 Time to Signal: With a feed watching for shifts continuously, problems and insights surface in minutes, leading to mich faster decision making, conversion and sales closure.
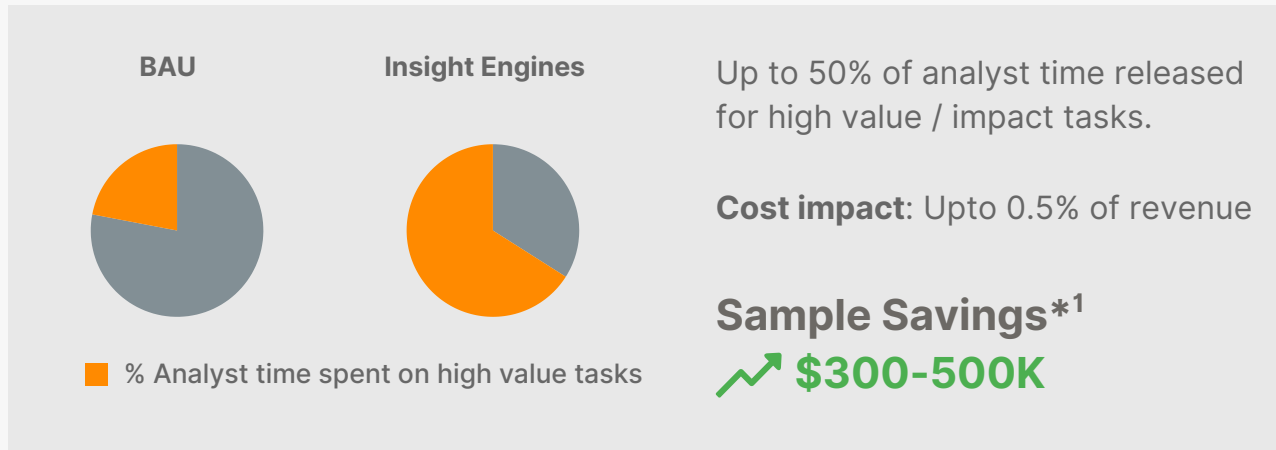
#2 Analyst Force-Multiplier: Instead of running 20 versions of a cohort query or summarizing in PowerPoint, analysts focus on forecasting, experimentation, and proactive diagnosis.

#3 Revenue Protection: Catching an anomaly in churn, CAC, or conversion 48 hours earlier can prevent millions in downstream loss.
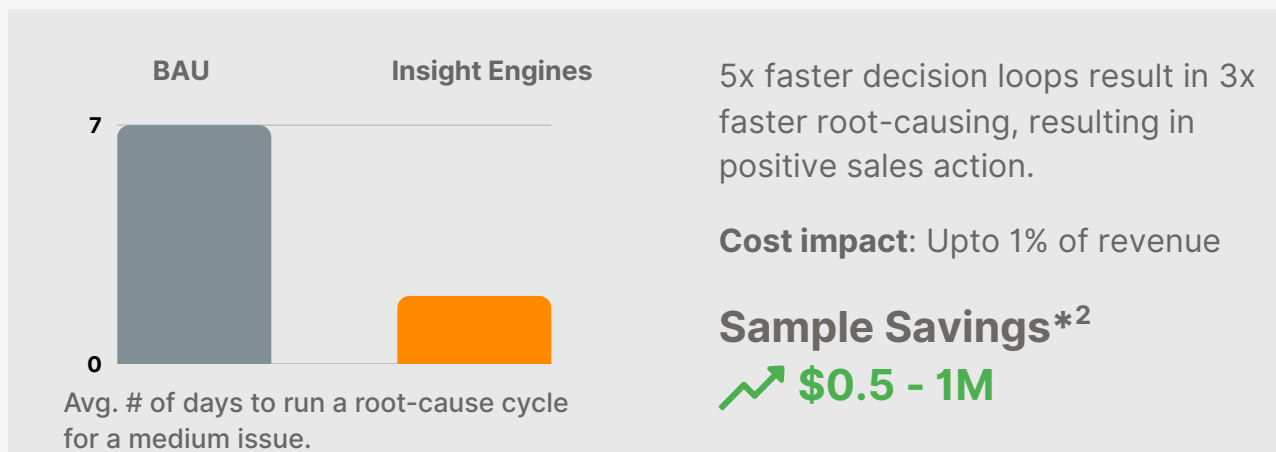
#4 Opportunity Acceleration: Hidden wins (E.g., high-performing ad segments or rising NPS in a niche customer group) are surfaced and acted on immediately.

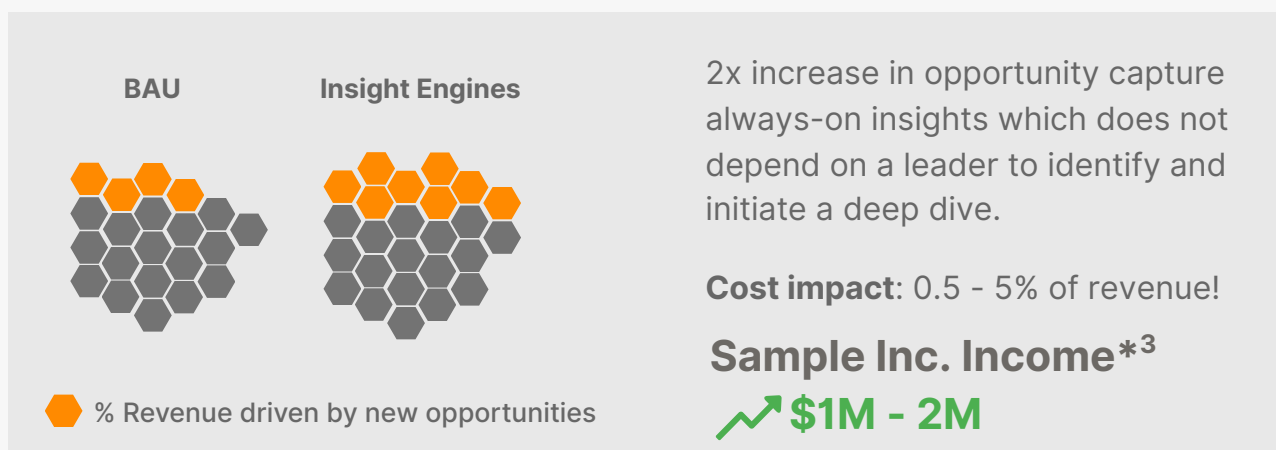**BI BABBAGE INSIGHT**

Sample Impact

Analyst Productivity

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■ % Analyst time spent on high value tasks

Up to 50% of analyst time released for high value / impact tasks.

Cost impact: Upto 0.5% of revenue

Sample Savings*[1]
📈 **$300-500K**

Decision Latency

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7

0

Avg. # of days to run a root-cause cycle for a medium issue.

5x faster decision loops result in 3x faster root-causing, resulting in positive sales action.

Cost impact: Upto 1% of revenue

Sample Savings*[2]
📈 **$0.5 - 1M**

Opportunity Capture

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⬡ % Revenue driven by new opportunities

2x increase in opportunity capture always-on insights which does not depend on a leader to identify and initiate a deep dive.

Cost impact: 0.5 - 5% of revenue!

Sample Inc. Income*[3]
📈 **$1M - 2M**

* Assuming a $100 M revenue business
1 Savings calculated assuming 50% of analyst bandwidth gets freed (calculated conservatively as analyst team cost)
2 Savings calculated as addressing 1% of revenue leakage as bugs, anomalies, broken flows, etc.
3 Incremental income from new revenue sources estimated conservatively as 1-2% on revenue

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Organizations that move to the new paradigm will have accelerated decision making, cost efficiencies, and thus, a competitive advantage.

The Insight Game has changed!

Today's high-velocity businesses can't afford to wait for the right question or waste time navigating the dashboard sprawl. Insights must arrive before the question does.

Proactive insight engines detect, prioritize, explain, and evolve with your business. They reduce cognitive load, eliminate blind spots, and compress decision latency from days to minutes. This shifts not just how organizations receive insight but is likely to have a wide-ranging organizational, cultural and strategic impact on how companies are run.

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At Babbage, we believe insight engines should feel like your company's own chief of staff for data, watching quietly and voicing only when interesting insights appear. This allows companies to focus on the actions stemming from the insights rather than navigating the graveyard of dashboards, BI tools, and multi-page reports trying to "catch" the insight.

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BI About Babbage Insight

Babbage Insight is your instant company newspaper. Think of it as your personal Chief Analytics Officer that can help surface insights without asking a single question but also allow you to investigate your structured data instantly.

Karthik Shashidhar
Co-Founder - Data Science, Sales, Marketing and Evangelism.

Karthik is an award-winning data science leader, having performed multiple roles across data science and analytics over the last dozen years. Most recently, he was Senior Vice President of Data at Delhivery (India's largest logistics startup). Karthik has written a book on market design and taught at IIM Bangalore. He holds a Bachelor's degree in Computer Science and Engineering from IIT Madras and a PGDM (equivalent to an MBA) from IIM Bangalore.

Manu Bhardwaj
Co-Founder - Product, Operations, Design and Software Development.

Manu has 15+ years of US-based technology product leadership experience, focusing on enterprise SaaS platforms and investment banking technology. While in Chicago, he built consumer lending+BNPL+credit card B2B2C platforms at Amount Inc. and Avant, for clients including HSBC, PNC Bank and Capital One. While in New York City, he led risk management and software development programs at Deutsche Bank, JPMorganChase and Bloomberg LP. He holds a Bachelor's degree in Computer Science and Engineering from PESIT Bangalore, and a PGDM (equivalent to an MBA) from IIM Bangalore.

Want to know more?

Meet the Babbage Insight founding team at BabbageInsight.com.

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