Hype Alert: Not All AI-Enabled Business Intelligence Makes the Grade

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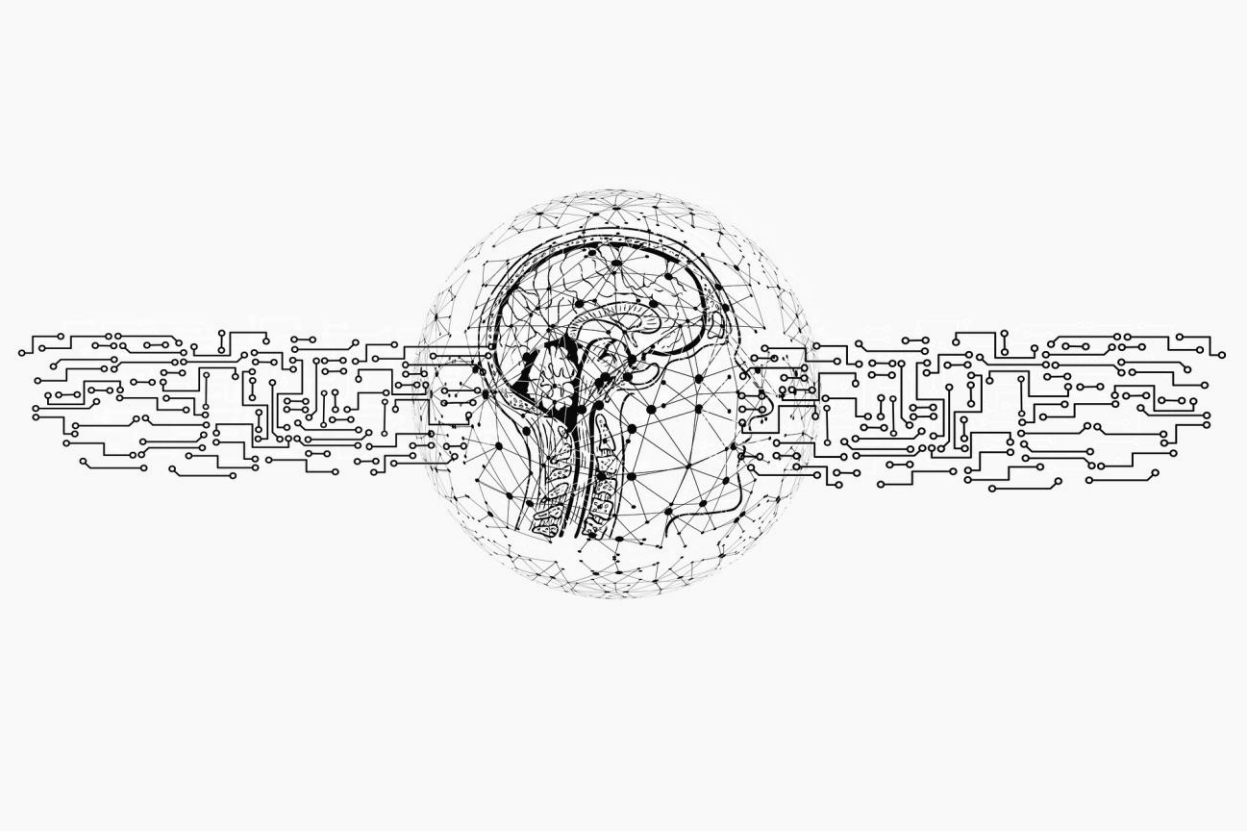

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Not All AI Enabled BI Makes the Grade

Executive Summary: A quick look at the last decade of AI enablement in business intelligence platforms gives buyers insight into the real leaders in the race for automated insight. Walk away with three deal-breakers when selecting the right AI-enabled BI platform, and five best practices for making the most of your investment.

From AI Confusion to Digital Dominance

The generative AI explosion has created a crazy world out there; it is the wild, wild west. Research company, Exploding Topics, estimates that there are already 70,000 who claim to be AI companies; with more than 150 million companies already using AI. The burgeoning AI company, Hugging Face, now claims to have more than a million models, apps, and data sets already under their care. With more companies formed every day, and information overload on hyperdrive, there is way too much to navigate in the world of AI.

Hidden in this explosion of hundreds of thousands or millions of AI choices that we have to make, we are already discovering the emergence of leaders and laggards.

According to the McKinsey Quote of the Day…

> "Gen AI is a great addition to any activity that requires creativity and needs human interaction or leadership. And if managed correctly, gen AI can help employees be happier, more content, and focus on what they love doing."

As noted in the quote, digital leaders are already recognizing the potential of AI and generative AI to enhance things normally created by humans. Everything from art to software code has the potential to make our lives better and more productive.

The potential is there, but all of the hype around AI has caused massive confusion. An inordinate amount of money pumped into new companies and marketing coffers. Every day when I get up, I check out the AI and the generative AI news; and every day it is a little bit more confusing.

Think about some of the AI chaos and uncertainty being thrust upon us every day. The leadership at Open AI, the makers of ChatGPT, have mostly departed due to the turmoil of the last couple of years. The founders of Inflexion AI left and joined the Microsoft AI division. There are still unanswered regulatory and compliance regulations. There is an uproar from artists and content creators regarding the right to use their work to train AI models. On top of all of this, the infrastructure to run global AI is massive. The energy that it will take to run AI in the US in the future is approximately twice the amount of energy that we are currently creating.

Billions have been invested, twenty-five billion in the first quarter of 2024 alone; and there will be a busting of the bubble. We have seen it happen once. It will happen again, and this time it is going to be a nuclear explosion. There will be big losses.

In the face of all the uncertainty and confusion, one thing is clear: The potential hidden in AI is greater than the risk. AI is a game changer. It reminds me of the quote from the famous architect, engineer, and philosopher, Buckminster Fuller...

> "You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete."
>
> - Buckminster Fuller

With AI we are building a new model that makes the old model obsolete; and at this point in the game, a "do nothing" strategy is no longer an option. Everyone is aware that they have to do something with generative AI. Why do we need to act now? Because we are already seeing value being created by AI and generative AI in three areas: acceleration, innovation, and digital dominance.

First, generative AI has become an accelerant of almost everything. With it we create faster: faster code, faster writing, faster graphics, quicker data management, quicker insight, and so much more. We are seeing the acceleration of insight, the acceleration of everything faster. Creation of things faster, writing faster code generation, better productivity.

Second, generative AI is producing more innovation, especially innovation in the creation of content, but more importantly new companies, new business models, new AI products, and new insight never before accessible. In concert with acceleration, we are seeing a faster pace of innovation, as well.

Third, generative AI has ushered in a push for digital dominance. For the last 10 years the boardroom discussion has been all about digital transformation. However, since most organizational systems are now digital, transformation is no longer enough. Hidden in the AI explosion are some of the secrets to

moving beyond digital transformation to digital dominance. Thos who can dominate with digital and AI capabilities will be the winners in the coming years.

Generative AI Forever Changes AI Perceptions

I am going to assume that you already understand the basics of AI and generative AI. However, it will be helpful to understand the Ferraro Consulting definitions to make better sense of the rest of the framework developed in this paper.

Definitions

Artificial Intelligence (AI) is the ability of machines to think like humans. It stems from the idea that given enough data and compute power, machines will be able to think and learn using mathematical simulation of the human brain. Thinking like humans includes concepts like self-learning, reasoning, deciding, correcting, adapting, communicating, and—most importantly—increasing overall intelligence.

Generative AI is artificial intelligence that generates content with processing capabilities like the human mind, all based on human input to guide the creation of content. Possible generation types are unlimited, but currently include written content, visual content, audio content, and programmatic content. With the use of automation, intelligent business actions can also be taken by generative AI.

When you understand a working definition of artificial intelligence, with human-like reasoning, self-learning, and other human characteristics, it is obvious that the technology is not there yet. However, with the exponential growth of compute power, we are making incredible strides toward true artificial intelligence. In addition, to better understand the state of AI, it is vital to know that much of what we are

calling AI at this point is still a combination of machine learning and advanced analytics. There will be a day where AI will think, reason, learn, and adapt like humans; and it may not be that far off in the future.

With regard to generative AI, growth has been explosive, not because the technology is new or highly advanced, but because of advancements in the decades that preceded its release. In order to create content, it builds on a foundation of machine learning and digital advancements over the last ten years, or more. Consider what was already capable when generative AI arrived.

Before generative AI could write, spell checking, grammar checking, writing assistance, and writing recommendations were already available in many different products. For graphics, there were trillions of digital images and ample intelligence to scan, tag, and analyze all of these images. In music, there were more than 100 million digital songs on Spotify alone, along with the ability to analyze the music. For video, YouTube alone had more than 4 billion videos. Coding is almost too easy. All code is already digital, and language based. Software is already eating the world. None of these generative AI applications would be possible without an abundance of digital content and artificial intelligence that had already been applied in these areas over the last decade.

The History of AI Enabled Business Intelligence

The use of generative AI in business intelligence is no different than all other content creation use cases just mentioned. Remember, generative AI, with its ability to use AI to create things, has mostly just highlighted the advances that have already been made over the last decade. Therefore, to understand the use of generative AI in business intelligence, we have to understand the history of AI enabled business intelligence.

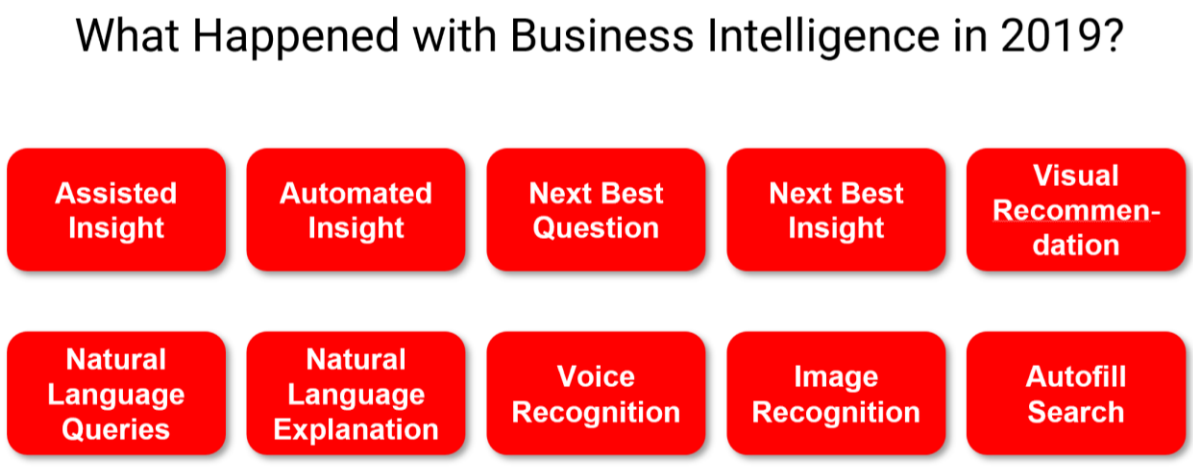

Diagram 1 - AI enabled business intelligence capabilities in 2019

By 2019, every capability listed in *Diagram 1* was already functional in several business intelligence companies. At that time, I predicted that the business intelligence companies who were investing heavily in AI would be the winners in the next phase of BI innovation. I also completed some quantitative research to determine which of these capabilities were most important to users of business intelligence. Using the results of the research, I created a data-driven ranking and applied it to all of the vendors who were already investing heavily in AI. In 2019, there were only seven companies with significant AI enablement in their platforms.

If you look at the full set of capabilities listed here, it is very obviously the precursor for a business intelligence platform copilot. Assisted insight guided the user to new insight within the current user context. Automated insight provided insight that appeared the user opened the application. Next best question and next best insight provided the user options for moving forward in their discovery journey. Almost everyone was doing visual recommendations. Users could write natural language queries, and when insight was returned it included a natural language explanation of the results. When users began to type something into the business intelligence search engine, suggestions were automatically filled in based on semantics or previous searches. Image and voice recognition were already in full swing, some within the platform and some through partners.

This set of capabilities should look familiar, since this is what many of the new and legacy BI vendors are promoting as innovation because they tacked generative AI onto their platforms in the last year. However, the truth is that none of this is new. All of these capabilities were already in place back in 2019.

A Realistic View of AI Enabled Business Intelligence Today

So how does what happened in 2019 impact what is happening here in 2024? When you understand the history of AI enablement in business intelligence, the current vendor landscape falls neatly into four categories. [See Diagram 2 below.]

First, there are the add-ons. These are the vendors that already have enterprise business intelligence capabilities. However, they did not invest early in AI. Now, in the last couple of years, they tacked on generative AI. As a result, they have limited AI enablement and limited automation.

Second, there are the newbies. The newbies got excited about the potential for AI and BI in the last couple of years, so they launched new products. Most of them have flashy new AI capabilities, but they lack the necessary capabilities for the modern enterprise.

Third, there are the laggards. The laggards will need to greatly accelerate their AI innovation and investment in the next couple of years. If they do not invest now, they will either be gone or continue to lag behind. These are companies that are late to market in terms of implementing any kind of AI enablement in their BI platforms.

Diagram 2 – Four categories of AI-enabled business intelligence platforms

Fourth, the leaders are the companies who were already AI-enabling their platforms five and ten years ago. When generative AI hit, they already had a core AI engine functioning in their platforms. As a result, generative AI is already completely embedded in their platform, not just tacked on. They are already AI enabling and automating their entire enterprise-grade platforms. They have copilots that exist throughout the entire BI life cycle; and they are moving rapidly toward persona-based AI agents.

Three Foundational AI Enablers for Business Intelligence

At Ferraro Consulting we have identified four technology innovations that separate the leaders from all others in their use of AI for business intelligence: a business semantic layer, an embedded AI engine, advanced human in the loop feedback, and person-based AI agents.

ONE: A Business Semantic Layer

If your business intelligence AI does not speak business like you speak business, it will fail. For this reason, we recommend an architecture that puts generative AI on top of a business semantic layer.

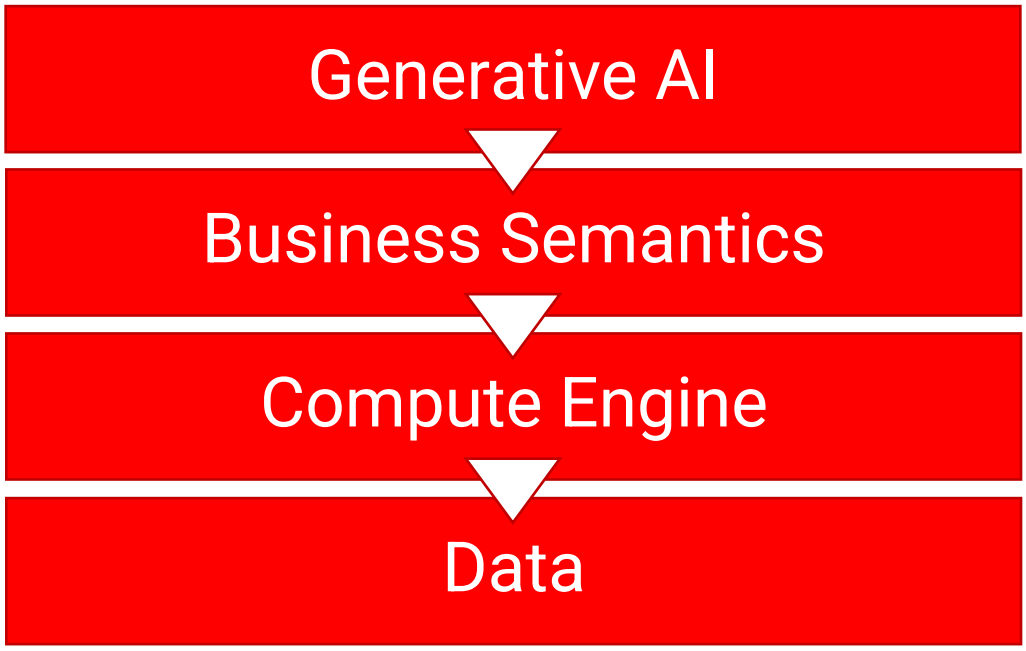

Diagram 3 – Generative AI architecture for business intelligence

In *Diagram 3*, the business semantics layer communicates directly with the compute engine and the compute engine does high performance analytics directly on the data. The analytical compute engine then feeds the results back up into the user's desktop, through the generative AI interface.

This architecture works, first because generative AI does not speak the language of your business. It needs some training. The business semantic layer provides the language needed by the generative AI engine. Second, the architecture works because generative AI does not have an analytical compute engine. It needs some help. The compute engine provides the power necessary to get answers quickly. Third, this architecture works because generative AI has problems with hallucination. The last thing you want is a generative AI engine that directly connects to your data.

A business semantic layer solves the challenges you might face if you just tacked a generative AI engine onto a business intelligence platform. The generative AI engine only has to communicate with the semantic layer. Only the business semantic layer defines the query. The query runs directly from the semantic layer to the data, and therefore it returns accurate results to generative AI user. The business semantic layer provides greater accuracy, and it provides the analytical compute power necessary for enterprise BI.

TWO: An Embedded AI Engine

The second innovation that distinguishes BI leaders from BI laggards and newbies is the existence of a core AI engine embedded. In the platform generative AI by itself is not AI. Generative AI is a component in an ecosystem of AI modules that can all work together.

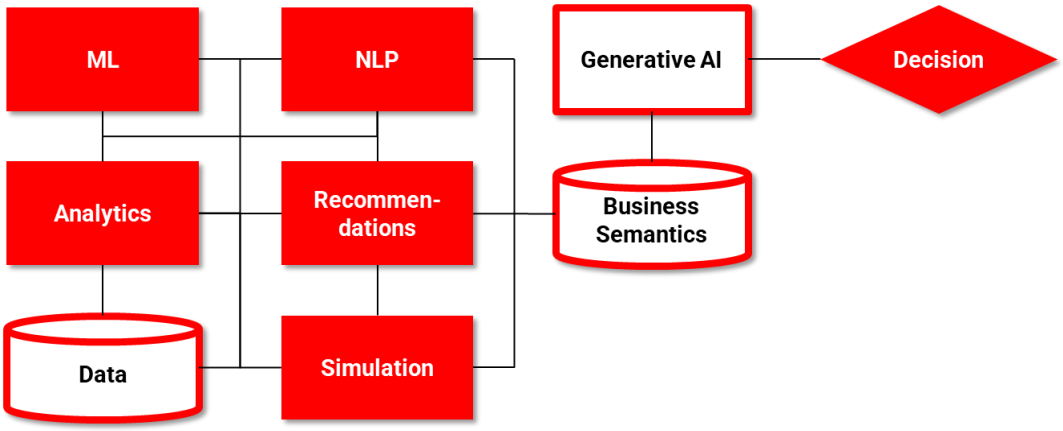

Diagram 4 – Generative AI and general AI working together

Diagram 4 shows how generative AI works well with an existing, embedded AI engine in the business intelligence platform. Instead of expecting a generative AI engine to do all the work, the engine is able to pull from work that is already being done by core AI capabilities already embedded in the BI platform.

In this architecture, the presence of an embedded analytical compute engine multiplies the number of capabilities supported by generative AI. Several business intelligence platforms already include an advanced analytical engine for complex algorithms, a recommendation engine for next best action, a simulation engine for forecasting and impact analysis, a natural language processing engine, and other AI capabilities. Generative AI by itself cannot do all that AI is capable of doing. So then, to the extent which a BI platform has already been doing AI enablement, they will exceed the capabilities of new entries, laggards, and add-ons.

THREE: Advanced Human in the Loop Feedback

The third innovation that separates BI leaders from laggards is human in the loop feedback. A comprehensive implementation of human in the loop feedback will continuously increase the value generated by AI enabled BI. Ferraro Consulting has identified six different elements of advanced feedback.

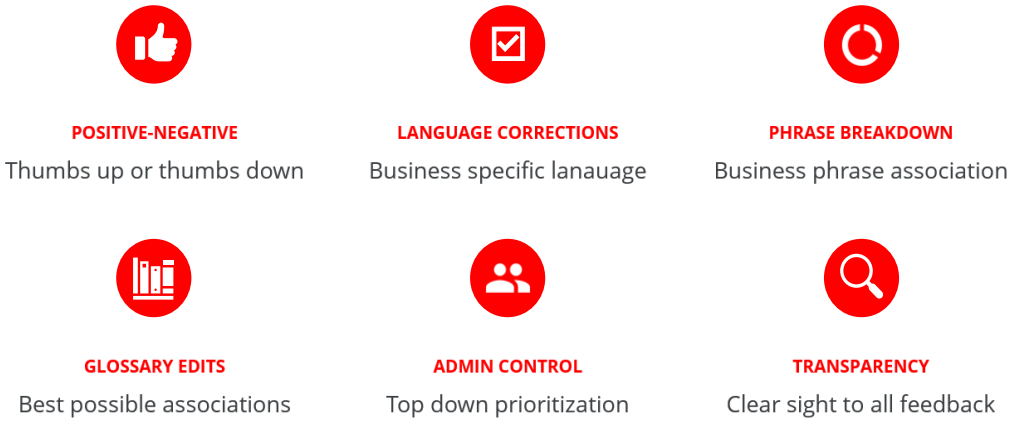

Diagram 5 – The six elements of advanced human in the loop feedback

First, the most basic human in the loop feedback is the simplistic positive-negative or thumbs up-thumbs down option. While bilateral feedback is a good start, it does not provide the level of detail necessary to fine tune generative AI for BI.

Second, human in the loop feedback should have language corrections, the ability of the of the user to go into the semantic model, change the language, and redirect both query and search as needed.

Third, in order to ensure accuracy, it should be possible to break every question down into phrases. Solid human in the loop feedback allows for the association of business phrases with the language in the data model for a specific organization.

Fourth, the model steward should be able to update the business glossary to reflect the best possible association of terms and definitions with the semantic model. The level of granularity is commensurate with the continuing improvement of accuracy.

Fifth, administrators and subject matter experts should be able to see all corrections and a single control plane. By so doing, they can determine which corrections to prioritize in the fine tuning of the model.

Sixth, transparency for all human in the loop feedback is extremely important for the governance of AI for BI. In addition, transparency ensures a better understanding of how generative AI is being used by your organization, and how the impact is improving over time.

Four: Persona-Based AI Agents

The fourth innovation that distinguishes BI leaders from BI laggards and newbies is persona-based AI agents. An AI agent is a software construct that is able to reason, learn, adapt, act, react, and collaborate.

There are three types of AI agents: business process agents, task-based agents, and persona-based agents. We have experienced process mining and robotic process automation for several years now. In addition, there are many AI agents that are designed to form very specific tasks, like making travel arrangements or providing documentation information.

A persona-based AI agent is a combination of generative AI technology with other AI technology to mimic the work of a person in an organization. Persona-based agents are often made up of multiple task-based agents and business process agents that mimic the different tasks done by a person in a specific role, and the business processes for which they are responsible. For example, there could be an AI agent that does all of the work traditionally done by a data engineer, data analyst, or business analyst. In the example of a business analyst, a business user should be able to interact with an agent in exactly the same way interaction takes place with the human business analyst.

To achieve human-like interaction with an AI agent in business intelligence and analytic platforms, requires investments in three areas: a large language model (LLM), a domain language model, and a digital twin. An LLM gives the AI agent all of the natural language necessary to dialogue in like manner. The domain language model gives the AI agent the language necessary to dialogue in language specific to insight-influenced decision with a specific industry, business unit, and data landscape. The digital twin does not necessarily require a duplication of data, it simply provides the AI Business Analyst with access to the same data and processing engines available to a corresponding business analyst.

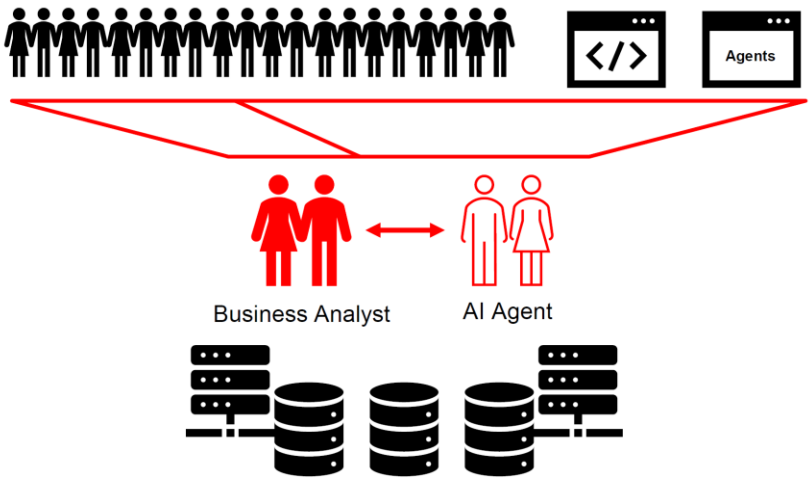

Diagram 6 – Persona-based AI agents as assistant and extension

Diagram 6 shows that there are two roles played by the persona-based AI agent: assistance and extension. As the hunger for data and insight grows among today's digital businesses, the bandwidth of

most data analysts and business analysts is stretched. Because of the growing need for data, the AI agent does not replace the Business Analyst, it becomes an assistant. The Business Analyst will fully understand the data, the business context, and how the AI agent operates and will be able to utilize its help with precision. In addition, the AI agent becomes an extension of the Business Analyst; some people will be able to go directly to the agent for answers and insight.

Five Best Practices to Maximize the Impact of AI for BI

01 Select vendors based on their advanced use of generative AI and general AI. You can use this information to create a checklist of the types of AI enablement that are important to your organization.

02 Identify opportunities for generative AI across the entire analytical life cycle. Don't just limit yourself to AI for BI. For example, there are significant opportunities for AI-enablement in data engineering; and some BI vendors have AI-enabled data engineering already built into their platforms.

03 Foster a culture of innovation. Open the platform up to your organization. Let them start using it. Let them experiment. As you are setting up a sandbox, consider requiring technologists to have a business partner and businesspeople to have a technical partner.

04 Create a continuous learning environment. The AI and generative AI landscape is changing so fast, with new technology and new innovation every day. The speed of change requires ongoing learning, and more importantly, continuous dialogue with end users. Where possible, measure the AI and BI literacy of your organization.

05 Measure the impact of generative AI in five areas: time, resources, cost, speed, and innovation. Create a baseline and maintain reporting on time saved, resources saved, cost reductions, increases in speed to insight, and speed of innovation.

For more information or a free consultation, contact Ferraro Consulting at john@ferraroconsulting.com.

Ferraro Consulting FirstGlance™

If you thought generative AI created a massive technology wave, wait until you see the coming agentic AI tsunami. Imagine a world where persona-based AI agents mimic the roles of today's workforce, and even outnumber their human counterparts.

Zenlytic is riding the peak of the coming tsunami with their AI data analyst, Zöe. This bright and promising young lady is showing signs of brilliance as she wows users with what might be the industry's most complete and accurate representation of conversations you might have with a data analyst when you dialogue face to face.

Company at a Glance

Zenlytic was founded in 2019 by Ryan Janssen and Paul Blankley. Headquartered in New York City, the company has raised a total of $15.4M in funding over 3 rounds. Their latest funding was $9M, announced on September 26, 2024, from a Series A round, equipping them to accelerate sales, marketing, and product in 2025.

Product at a Glance

At the core, Zenlytic is an analytics platform with a natural language interface that promises to extend insight-informed decisions to a much broader audience in every organization. While their modern business intelligence platform was built with non-technical users in mind, data-savvy users find most of what they need to operate their analytics organization. For quick set up and access to multiple sources, the Zenlytic metrics to SQL feature dynamically joins tables, merges results, and unifies dates to produce consistent SQL. Admins can join data and define calculations once for consistent insight. Since the product is built for dbt and integrated with Slack, there is broad appeal, especially for data teams. For non-technical users, Zöe, the Zenlytic AI data analyst, instantly answers most questions they would ask a data analyst, without having to talk "SQL-like" language. Zöe follows up with plain language explanations and suggestions for the next best question or related insight. For companies that don't have a data team, Zenlytic offers Data Team-as-a-service (DTaaS) to get new customers up and running without new hires.

Ferraro Consulting POV

Ferraro Consulting predicted that agentic AI would outpace the generative AI hype by early 2025, and it's happening already. The most important part of the tsunami will be a flood of persona-based AI agents, digital twins that mimic what a real human does in their current role. Because Zenlytic was well-ahead of the curve when generative AI showed up on the scene in the fall of 2022, they have been able to deliver a highly functional persona-based AI agent mimicking a data analyst or business analyst. Expect the company to continue to excel at near-human language communication with their AI agent, and to expand into more business and industry specific language as their business expands.

Recommendation: If you are in the market for an AI enabled business intelligence or analytics platform, Zenlytic should be on your list of companies to consider. That said, make sure they are the right fit for your organization, looking carefully at enterprise-grade capabilities to support your technology standards.