

Vetting AI Vendor Claims



Contents

Executive Summary.....	2
Introduction	3
Understanding AI and Machine Learning	4
AI Hype	6
Participants and Stakeholders	8
Common AI Claims and Marketing Tactics	9
Indicators of Credible AI Claims	12
Questions to Ask Vendors.....	16
Evaluating AI in Action	20
Why So Many AI Initiatives Fail.....	22
Conclusion.....	24
About First Analytics	25



Executive Summary

Businesses face the challenge of navigating a sea of vendors boasting revolutionary AI solutions. This guide provides a framework for organizations to critically assess these claims and make informed decisions regarding AI technology investments.

The guide begins by stressing the importance of understanding the basics of AI, its capabilities, and its limitations. It acknowledges the transformative potential of AI but cautions against the hype and overpromises often associated with AI products and services. By advocating for a blend of due diligence, critical thinking, and informed skepticism, the guide equips business and technology leaders with the tools needed to distinguish between genuine innovation and marketing hyperbole.

Key strategies outlined include:

- **Evaluating the Credibility of AI Claims:** An enumeration of common vendor AI claims contrasted with what is often reality, along with a list of indicators of credible claims.
- **Asking the Right Questions:** Curated sets of more than 70 questions aimed at vendors to uncover the substantive value of their AI solutions beyond the sales pitch.
- **Seeing AI in Action:** Recommendations for practical evaluations of AI solutions, including pilot projects, demonstrations, and real-world performance metrics.

The guide highlights common reasons behind the failure of AI initiatives, such as mismatched expectations, lack of clarity in implementation strategies, and underestimation of the importance of data quality and availability. It concludes with actionable advice for businesses to leverage AI's potential responsibly and effectively, emphasizing the need for ongoing education, realistic goal-setting, and strategic planning in AI investments.



Introduction

Artificial Intelligence (AI) and Machine Learning (ML) are no longer just buzzwords but are increasingly becoming elements of modern business strategy. The ability to discern the real value behind vendors' AI claims is important. First Analytics presents this guide to assist businesses in navigating the often complex and hyperbolic landscape of AI capabilities professed by vendors.

With the proliferation of AI technologies, a diverse array of vendors - from established tech giants to startups - are vying for market space, each touting their AI solutions as the most innovative and effective. However, not all claims withstand scrutiny, and the onus falls on their clients to separate fact from fiction. This guide aims to provide businesses with the necessary insights and tools to make informed decisions about AI investments.

Understanding the AI market landscape is integral to this process. The AI domain is vast and continuously evolving, encompassing everything from simple automation tools to complex predictive analytics and machine learning models. And even more recently, generative AI applications that, among other things, interact with users in a conversational format. The diversity in applications and the rapid pace of development make it challenging for non-specialists to gauge the actual capabilities and limitations of AI solutions.

This guide will navigate through the foundational knowledge of AI, common vendor claims and their veracity, key indicators of credible AI offerings, and practical steps to assess and validate these claims. Our goal is to enable our clients, and even those who are not our clients, to confidently engage with AI vendors, ensuring that their investments in AI technologies are sound, effective, and aligned with their business objectives.

Disclosure: this guide was largely written by an AI (ChatGPT4 and some LaMDA and Claude 2.1) with instructions, prompting, additions, and editing by a human AI expert.



Understanding AI and Machine Learning

Artificial Intelligence (AI) and Machine Learning (ML) are foundational technologies that are reshaping industries and business operations. We aim, at a high level, to demystify these concepts, providing a clear understanding that is vital for evaluating vendors' claims effectively.

AI simulates human intelligence in machines that are programmed to learn and think. It encompasses a broad range of technologies, from simple rule-based automation systems to sophisticated algorithms capable of learning and adapting. The core of AI is to enable machines to perform tasks that typically require human intelligence, such as visual perception, speech recognition, numerical analysis, and decision-making.

Machine Learning, a subset of AI, focuses on the development of algorithms that enable computers to learn and improve from experience without being explicitly programmed. ML algorithms use mathematical techniques to identify patterns in data, making predictions or decisions based on that data. This ability to learn from data sets ML apart from traditional software, allowing for more dynamic and adaptive solutions.

Applications of AI are endless, but here are a number of examples of different types of AI applications:

1. **Predictive Maintenance:** Utilizing AI to predict when maintenance should be performed on equipment, preventing unexpected equipment failures, and increasing operational efficiency.
2. **Customer Churn Prediction:** Identify customers likely to stop doing business with the company in the near future by assessing previous churn patterns and customer engagement signals. Allows for targeted retention programs.
3. **Customer Segmentation:** Group customers into different categories based on their demographics, preferences, behavior, and purchase history. This helps to design personalized marketing campaigns, offers, and recommendations that appeal to each segment.
4. **Sales Forecasting:** Predict future product/service sales based on past sales data, seasonality, marketing campaigns, and macroeconomic factors. Enables data-driven decisions on inventory, hiring, and supply chain.
5. **Credit Scoring:** Leverage machine learning models to determine an individual's creditworthiness and likelihood of defaulting on payments based on a multitude of financial attributes collected over time.
6. **Fraud Detection:** Use AI techniques such as outlier detection and clustering analysis to uncover highly unusual or suspicious data points indicative of financial statement fraud or money laundering activities.



7. Computer Vision: Allowing machines to interpret and make decisions based on visual data. Used in medical imaging, visual inspection, and autonomous vehicles.
8. Intelligent Process Automation (IPA): Combining basic task automation with AI capabilities like text analysis, speech recognition, and planning to automate complex business processes end-to-end.
9. Anomaly Detection: Identifying rare events or unusual patterns in data that could signal a problem or defect. Used for fraud detection and system monitoring.
10. Speech Recognition: Converting speech to text through AI. Applied in virtual assistants, transcription software, and speech analytics.
11. Cybersecurity: Employing AI algorithms to detect threats, malware, and intrusions by spotting subtle anomalies in network traffic, user behavior, and systems access patterns.
12. Recommendation Systems: Using AI to understand customer preferences and items' attributes to provide personalized product or content recommendations that match interests.
13. Generative AI: a subset of AI that focuses on creating new content, such as text, images, audio, or code, based on patterns learned from existing data. Unlike traditional AI that analyzes and interprets data, Generative AI synthesizes novel content following the learned patterns.

AI can add significant value to businesses by automating routine tasks, enhancing decision-making with data-driven insights, and creating new opportunities for innovation and customer engagement. It can lead to increased efficiency, cost savings, and competitive advantages.

However, the practical implementation of AI varies widely. Businesses need to understand not only what AI can do but also its limitations and the specific context in which it can be effectively applied. This knowledge is key to assessing the veracity of vendors' AI claims and understanding how AI solutions can align with and fulfill business needs.



AI Hype

AI hype has been a prominent feature of the technology landscape for the past decade, driven by a combination of rapid advancements in artificial intelligence and the high expectations placed on its transformative potential. The concept of the Hype Cycle, popularized by research and advisory firm Gartner, offers a valuable framework to understand the cyclical nature of AI hype. It illustrates the typical trajectory that emerging technologies follow, including AI, as they move from initial excitement to disillusionment and eventually towards maturity and practical application.

The AI Hype Cycle typically begins with the "Innovation Trigger" phase, where breakthroughs and innovations capture the imagination of the tech industry and the broader public. High-profile developments like deep learning algorithms, generative AI, and impressive AI-driven applications in various domains contribute to a frenzy of enthusiasm. Investors, startups, and established companies alike rush to capitalize on the perceived potential of AI.

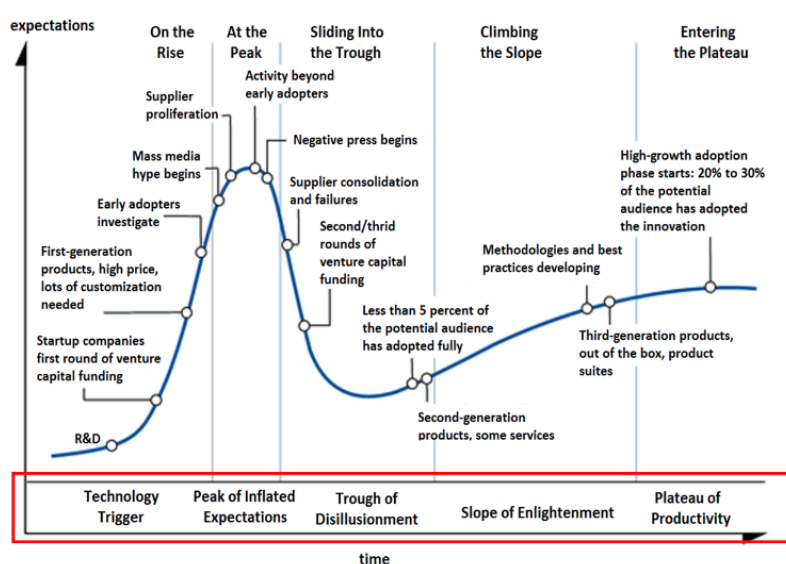


Figure 1: The Gartner Hype Cycle

However, the AI Hype Cycle does not stop at the peak of excitement. It proceeds to the "Peak of Inflated Expectations," a stage characterized by unrealistic expectations and overblown claims. During this phase, many AI projects are initiated, often without a clear understanding of their limitations or feasibility. As time passes and these projects encounter challenges, the disillusionment phase, known as the "Trough of Disillusionment," sets in. The initial hype gives way to skepticism and disappointment, as the technology struggles to meet the lofty expectations set for it.

The key to successfully navigating the AI Hype Cycle lies in moving beyond the disillusionment phase. As AI matures and real-world applications begin to demonstrate value, the technology enters the "Slope of Enlightenment" and eventually reaches the "Plateau of Productivity." At this point, AI becomes an integral part of various industries and delivers tangible benefits, fulfilling the promises that initially sparked the hype. Stakeholders need to maintain a balanced perspective on AI, acknowledging both its potential and limitations, to leverage this powerful technology effectively and responsibly.



Vendor marketing often overrepresents their AI capabilities for several reasons:

- **Competitive Advantage:** In a crowded marketplace, vendors strive to stand out from the competition. Overemphasizing their AI capabilities can make their products or services appear more advanced and appealing to potential customers, giving them a competitive edge.
- **Capitalizing on Hype:** AI has been a buzzword in the tech industry for years, and vendors may want to capitalize on the hype to generate interest and demand for their products or services.
- **Incomplete Understanding:** Some vendors may genuinely believe in the potential of their AI solutions but have an incomplete understanding of the technology's limitations, leading them to make overly optimistic claims.
- **Customer Expectations:** Vendors may be responding to the perceived expectations of customers who often associate AI with transformative and magical solutions. Aligning marketing messages with these expectations can attract more buyers.
- **Sales Targets:** Sales and marketing teams within companies are often under pressure to meet revenue targets. Exaggerated AI claims can help generate leads and close deals, even if the product's capabilities are not as robust as advertised.
- **Lack of Regulation:** The AI field is relatively new and rapidly evolving, and regulatory oversight is still catching up. This lack of clear regulations allows vendors more freedom to make bold claims without immediate consequences.
- **Attracting Investment:** Startups and established companies alike may seek investment to fund their AI projects. Exaggerated AI claims can attract investors who are eager to be part of the next big thing, potentially securing more funding for the vendor.
- **Meeting Investor Expectations:** Companies under pressure to deliver returns to their shareholders or investors may feel compelled to create a buzz around their AI initiatives to maintain or increase stock prices or valuation.

While these reasons may explain why vendors are inclined to overrepresent their AI capabilities, it is important for buyers to exercise due diligence, conduct thorough evaluations, and seek evidence of a vendor's claims before making purchasing decisions. Being well-informed and asking the right questions can help buyers separate genuine AI capabilities from marketing hype.



Participants and Stakeholders

There are roles that various entities play in the successful deployment and management of AI solutions. This table below outlines the diverse individuals and groups involved, identifying their roles in the process, and therefore, in carefully evaluating vendor claims.

Participant/Stakeholder	Role
Business Decision Makers	Understanding AI potential and limitations, making decisions informed by the other participants.
End Users or Department Heads	Insights into AI solution alignment with departmental needs and practicality.
Technical Experts (Data Scientists, Data Engineers, AI Specialists)	Deciphering technical aspects, assessing credibility, ensuring technology aligns with business objectives.
IT and Integration Specialists	Understanding technical integration of AI solution into existing systems.
External Consultants or Third-Party Evaluators	Providing unbiased assessment of AI capabilities and claims.
Procurement and Legal Teams	Due diligence in vendor selection, focusing on contractual aspects, compliance with regulations.
Change Management Specialists	Facilitate integration of AI technologies into workflows, addressing resistance and enhancing adaptation.

When evaluating a possible vendor solution, a team comprised of these participants should be assembled beforehand, their roles and responsibilities outlined, and a formal vendor assessment plan established.



Common AI Claims and Marketing Tactics

The AI technology market is rife with claims and promises that often stretch the bounds of current capabilities. Understanding these claims and the marketing tactics behind them helps businesses make informed decisions. This following table lists common AI claims to help distinguish between genuine capabilities and mere marketing hype.

Note that some claims are pertinent to general and focused solutions with AI embedded, and some to stand-alone AI tools.

Claim Type	Claim	Reality
Exaggerated Capabilities	Many vendors claim their AI solutions can solve a wide array of complex problems with minimal input or customization.	AI technologies, especially ML models, often require significant customization and fine-tuning to work effectively in specific contexts. They are not universally applicable 'out of the box.'
Use of Jargon and Buzzwords	Extensive use of technical jargon and buzzwords to impress potential clients.	While AI is a technical field, genuine experts can explain their technology and its benefits in understandable terms. Overuse of jargon can be a red flag for superficial understanding or deliberate obfuscation.
Misrepresented Technology	Vendors may assert that their solutions employ advanced machine learning algorithms when they are, in fact, using simple, rule-based algorithms.	True machine learning involves algorithms that can learn from and make decisions based on data. Simple rule-based systems do not learn from data; they follow pre-programmed rules.
Explainability and Transparency	Our AI is a "black box" and its decision-making is proprietary.	Lack of explainability hinders trust; vendors should strive for explainable AI or provide some transparency.
The "Citizen Data Scientist"	Our AI platform can turn anyone into a data scientist, no expertise required.	While user-friendly AI tools are more accessible than ever, they still require a fundamental understanding of data science principles for effective use. Oversimplification can lead to incorrect assumptions and misuse of data.
AutoML Capabilities	Our AutoML platform can automatically create and deploy any machine learning model with no need for a data scientist.	AutoML can streamline model selection and parameter tuning, but it often cannot fully grasp complex, domain-specific nuances. Expert oversight is usually required for fine-tuning, interpreting results, and ensuring the model is ethically and contextually appropriate.
Simple Data Engineering	Our tool simplifies data engineering to a few clicks, making it easy for anyone	Data engineering involves complex processes like ETL (Extract, Transform, Load), data cleaning, and integration. While tools can streamline some aspects, they cannot fully replace the expertise needed for efficient and accurate data engineering.



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Automated Data Pipelines	With our AI, you can automatically set up and manage data pipelines with no technical knowledge	Automated tools can assist in pipeline creation, but understanding the nuances of data flow, error handling, and pipeline optimization is still needed for maintaining effective data operations. Complete automation oversimplifies these intricate processes.
Undisclosed Limitations	Promises of high accuracy and performance without disclosing limitations or the need for ongoing maintenance and data updates.	AI systems have inherent limitations and require continuous data inputs and maintenance to function optimally. Performance can vary significantly based on data quality and contextual factors.
Oversimplification of Implementation	Vendors may assert that integrating their AI solutions into existing systems is straightforward and seamless.	Integration can be complex and may require substantial modification of existing processes and systems. It often necessitates a strategic approach and careful planning.
Immediate Integration	Some vendors promise that their AI can be integrated with any existing infrastructure without downtime or technical adjustment.	Integration of AI systems usually involves a considerable amount of time and resources, including potential system downtime, to ensure compatibility and performance.
Fear of Missing Out (FOMO)	Jump on AI now or get left behind.	Real-world AI adoption is gradual; small proofs of concept often precede company-wide deployment. Beware of FOMO-driven claims.
Guaranteed ROI Claims	Assertions of guaranteed and immediate return on investment (ROI).	While AI can provide substantial ROI, results typically emerge over time and are influenced by various factors, including the quality of implementation and the alignment with business objectives.
Seamless Scalability	Our AI scales seamlessly to handle any data volume without performance loss.	Scalability depends greatly on architectural design. At high volumes, performance tuning and infrastructure adjustments are typically needed to maintain speed and efficiency.
Openness and Collaboration	We are committed to open-source development and collaboration.	The level of openness can vary; vendors should be transparent about their commitment to openness.
Self-Sufficiency	Vendors may claim that their AI systems can operate autonomously without human oversight or intervention.	AI systems typically require human oversight for tasks such as setting objectives, providing context, making judgment calls, and ethical considerations. They are not fully autonomous.
Universal Applicability	Vendors might suggest that their AI solution is applicable to any industry or problem without the need for specialized knowledge.	AI solutions often need to be tailored to specific domain contexts and require substantial domain-specific data to train effectively. The nuances of different industries can greatly affect the applicability and success of an AI solution.
Data Independence	Statements may be made suggesting that AI systems do not require large quantities of data to function effectively.	Most AI models, particularly those based on machine learning, are data-hungry and require large, well-curated datasets for training to achieve high accuracy and reliability.



Unfounded Future-Proofing	Claims that an AI solution is 'future-proof' and will not require updates or enhancements as technology evolves.	AI technology is rapidly evolving, and systems often require updates to stay current with the latest algorithms, security practices, and compatibility standards.
Cloud Cost	Our cloud platform significantly reduces computing costs, making it the most cost-effective solution.	While cloud computing can offer cost benefits, especially for scalability, the actual cost depends on usage patterns, data storage needs, and computing requirements. Costs can escalate quickly with increased usage or data volume.
Cloud Management	Manage all your cloud computing needs effortlessly without any specialized knowledge.	Effective management of cloud resources requires understanding of cloud architecture, data management, and security protocols. Tools can simplify certain aspects, but complete automation might overlook critical customizations and optimizations.
Privacy and Security Guarantees	Promises that AI systems are fully secure and will protect user data without fail.	While AI systems can enhance security measures, no system is entirely immune to breaches or failures. Ongoing security protocols, monitoring, and updates are critical for maintaining data privacy and security.
Bias and Fairness	Our AI is unbiased and fair.	All AI is vulnerable to bias; vendors should address bias mitigation and be transparent about potential biases.
Regulatory Compliance	Our AI complies with all regulations.	The regulatory landscape is evolving; vendors should stay informed and ensure compliance in specific contexts.
Sustainability Considerations	Our AI is environmentally friendly and uses minimal resources.	Training and running AI models can be energy-intensive; vendors should be transparent about environmental impact.

Stakeholders need to understand these claims and tactics to navigate the AI market effectively. Companies should approach vendor claims with a healthy skepticism and seek evidence to back up these claims. This involves asking for detailed case studies, proof of concept demonstrations, and engaging in deeper technical discussions to uncover the reality behind the marketing.

In addition, businesses should be aware of the broader context in which these claims are made. The AI market is highly competitive, and vendors are under pressure to stand out. This can sometimes lead to overzealous marketing or overselling capabilities. By being informed and vigilant, businesses can better assess the true value and potential of AI solutions offered by vendors.



Indicators of Credible AI Claims

Distinguishing between credible claims and marketing hyperbole is part of the vendor assessment process. Here we provide indicators that can help businesses identify genuine and trustworthy AI solutions. They are closely associated with the following section, “Questions to Ask Vendors.”

Vendor Expertise and Experience

Credible AI vendors typically have a proven track record and demonstrable expertise in AI and ML fields. Look for vendors who have a history of successful projects and collaborations, as well as a team with relevant qualifications and experience. The length of time a vendor has been actively providing AI solutions in the market can be a significant indicator of credibility. Companies that have sustained operations over several years are more likely to have refined their technology, addressed initial shortcomings, and established a track record of customer satisfaction and product reliability. This longevity can indicate a deeper understanding of the market and client needs.

Evidence of continuous learning and adaptation to new AI trends and technologies also indicates a credible vendor.

Credibility can be further gauged by looking at awards, certifications, or independent reviews from reputable industry analysts or organizations.

Transparency in Technology and Methodology

Trustworthy vendors are transparent and open about the technology and methodologies they use. They should be able to explain how their AI works, the data it requires, and its limitations.

Vendors should provide clear information on the data sources (where applicable), algorithms used, and the process of training their models. This transparency is necessary for assessing the applicability and potential effectiveness of the solution.

Consider the importance of the vendor's ability to provide detailed documentation and white papers. This documentation should be accessible and comprehensible to a non-expert audience, ensuring that potential users can understand the AI's functionalities and limitations. To the extent that technical documentation is available, that should be made available to data scientists, data engineers, and IT professionals.

Finally, vendors that contribute to or are active in the AI research community may demonstrate a commitment to advancing AI technology and practices.



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Evidence of Successful Implementations and Case Studies

Reliable vendors should be able to provide case studies or examples of successful implementations. These case studies should showcase how their AI solution addressed specific problems and the results achieved.

Testimonials from previous clients, especially those in similar industries or with similar use cases, can provide insights into the vendor's reliability and the effectiveness of their solution. The willingness of existing customers to serve as references with whom you can speak often signals a positive track record and reliability of the AI solution. Note, however, that corporate legal departments are increasingly forbidding testimonials and their employees serving as references.

Realistic and Measurable Claims

Look for vendors who make realistic claims about what their AI can achieve. Overpromising is a common red flag in the AI market. Credible vendors often provide measurable metrics or benchmarks to back up their claims, which can be verified through pilot projects or proof of concept trials.

Peer-to-Peer Technical Engagement

An important indicator of credibility is the vendor's willingness to facilitate direct, peer-to-peer discussions between their technical professionals, like data scientist developers, and the client's technical team. This openness for in-depth technical dialogue demonstrates confidence in their team's expertise and the robustness of their AI solution. It allows for a more nuanced understanding of the AI's capabilities and limitations and ensures that technical aspects are accurately communicated and understood. This engagement is particularly important for complex or customized AI implementations.

Transparency in Handling Bugs and Defects

A significant indicator of credibility is the vendor's openness about the existence of bugs and defects in their AI systems, as well as their approach to managing these issues. Trustworthy vendors should not only acknowledge the potential and existing flaws in their systems but also provide information about their processes for addressing and resolving these issues. These processes may include regular updates on bug fixes, a clear timeline for issue resolution, and a dedicated support system for handling technical problems.

Additionally, a credible vendor should have a proactive strategy for continuously improving their AI solution, incorporating feedback and learning from past defects to enhance system robustness and reliability.

Adaptability to Emerging AI Innovations

Credible vendors actively engage with new advancements in AI, ensuring their solutions incorporate the latest technologies and research. They demonstrate a commitment to continuous improvement, regularly updating their AI systems to stay at the forefront of the



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field. Such vendors show an understanding of AI's evolving nature, adapting their offerings to include emerging, innovative methods and insights.

Compliance with Ethical and Regulatory Standards

The vendor should provide information about compliance with ethical guidelines and regulatory standards, especially in sectors like healthcare, finance, and any area involving personal data. Credible AI vendors should be able to demonstrate their commitment to ethical AI practices and adherence to relevant regulations and standards. A deeper dive into the vendor's commitment to ethical AI, including their policies on privacy, bias mitigation, and the environmental impact of their AI operations should be part of the discussions.

Support and Commitment to Customer Success

Ongoing support and maintenance are vital for the long-term success of AI implementations. Reliable vendors offer comprehensive support and have clear policies for maintaining and updating their AI systems. This includes regular updates to the AI models, addressing any issues, and adapting the solution to changing requirements.

Details on how vendors support customer success through strategic advisory, best practices sharing, and proactive engagement can indicate a vendor's commitment to long-term client success.

Robust Security Measures

Credible AI vendors should prioritize security in their AI solutions. Look for vendors who can provide detailed information about their security protocols and data protection measures. Vendors must be proactive in applying security patches and updates and should have a strong track record of safeguarding against data breaches and cyber threats.

Scalability and Integration Capabilities

Vendors with credible AI offerings should provide solutions that are scalable and can grow with your business needs. They should have clear strategies for scaling up the AI system as required. The AI solutions should be compatible with existing systems and infrastructures, and vendors should offer integration support to ensure successful deployment.

Customization and Flexibility

A sign of a credible AI vendor is the ability to customize their offerings to fit the unique needs of a business or industry. There is a difference between "configuration" and "customization." Most AI systems require the more complicated customization route. The vendor should be willing to adapt their solutions rather than offering a one-size-fits-all product. Flexibility in terms of deployment options (cloud, on-premises, hybrid) and model tuning should also be offered by the vendor to accommodate your specific requirements.

User Training and Empowerment

Vendors should not only provide an AI solution but also empower their clients with the necessary training to utilize it effectively. This includes offering comprehensive documentation,



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tutorials, and user support. A credible vendor will have a clear onboarding process that helps users understand and leverage the AI system's full potential.

Quality and Diversity of Data

Credible vendors understand the importance of data quality and diversity for training robust AI models. They should be able to demonstrate how their models have been trained on high-quality, diverse datasets. They should also be transparent about how they handle data biases and what steps they take to ensure that their models are fair and unbiased.

Clear Communication and Customer Service

Effective communication is key to a successful partnership. Look for vendors who communicate clearly and promptly, making sure that all your questions and concerns are addressed. Credible vendors will have a dedicated customer service team that is accessible and responsive to provide assistance whenever needed.

Businesses should use these indicators as a checklist when evaluating AI vendors. It is also advisable to engage in detailed discussions, ask critical questions, and, where possible, seek third-party opinions or validations of the vendor's claims. This thorough vetting process will help in identifying AI solutions that are not only technically sound but also align well with the specific needs and goals of the business.



Questions to Ask Vendors

To effectively vet AI vendors and their claims, ask targeted questions that can uncover the depth and applicability of their AI solutions. What follows are example questions that businesses should consider asking AI vendors to ensure a thorough evaluation process. While not a complete list, it attempts to cover the main subjects for discussion. And while a number of them may seem obvious and routine, the responses when taken together can be judged for credibility.

As in the section, **Common AI Claims**, some of these questions are pertinent to general and focused solutions with AI embedded, and some to stand-alone AI tools.

For practical purposes, these questions can be copied into a spreadsheet, grouped as outlined below, and made into a scorecard to collect and grade responses. You may even convey such a spreadsheet to a vendor through an RFI (request for information), for them to respond to in advance of more formal discussions.

1. Technical and Functional Questions

- 1.1. How does your AI solution specifically address our business needs and challenges?
- 1.2. Can you describe the data requirements for your AI solution to function optimally?
- 1.3. What are the technical prerequisites for integrating your AI solution into our existing systems?
- 1.4. What level of customization does your AI solution offer for our specific industry and use cases?
- 1.5. How does your solution adapt to changes in data or business processes?
- 1.6. What technical infrastructure is required to integrate and run your AI solution effectively?
- 1.7. To what extent is your AI solution customizable to our industry's unique data types, workflows, and specialized use cases?
- 1.8. Can your modeling pipeline accept models developed outside of your system, such as models we have coded in Python or R?
- 1.9. How does your solution track data lineage from source to output? Can you ensure complete transparency into how each data element is used?
- 1.10. How does your AI solution handle error reporting and exception handling in a live environment?
- 1.11. Can the AI solution be integrated with our existing data analytics and reporting tools?
- 1.12. Can the AI solution be integrated with our existing data lakes or warehouses?



- 1.13. How does the AI system perform under different load conditions (e.g., high data volume)?
- 1.14. Are there any specific hardware or software dependencies for your AI solution?
- 1.15. How does the solution ensure data consistency and integrity during processing?
- 1.16. What disaster recovery and data backup mechanisms are incorporated in your AI system?
- 1.17. How is the AI system's performance monitored and optimized over time?

2. Algorithms and Models

- 2.1. What types of algorithms does your AI solution utilize (e.g., neural networks, decision trees, reinforcement learning, generative AI, etc.)?
- 2.2. Do you include traditional statistical methods, such as regression, cluster analysis and time series forecasting?
- 2.3. Name some of the models and algorithms you use for such tasks as unsupervised learning, supervised learning, anomaly detection, predictive modeling, etc.
- 2.4. How do you ensure the accuracy and reliability of these algorithms in various scenarios?
- 2.5. How transparent and explainable are the decisions made by your algorithms?
- 2.6. What methods do you use for “explainable AI” when causal factors need to be explored and interpreted?
- 2.7. Can you provide details on any proprietary algorithms or models used in your solution?
- 2.8. What open-source tools, libraries, or packages do you use?
- 2.9. How do you handle feature engineering and data pre-processing?
- 2.10. Do you have tools for model management and monitoring (e.g. MLOps)?
- 2.11. What is your approach to dealing with data drift and model degradation over time in deployed AI solutions?
- 2.12. How are your models trained, and what data is used in this training process?
- 2.13. What steps are taken to update and refine these algorithms over time?
- 2.14. How do your models handle real-world, noisy, or incomplete data?
- 2.15. Are there any known limitations or biases in your algorithms, and how are these addressed?

3. Performance and Validation

- 3.1. What metrics or benchmarks do you use to measure the performance of your AI solution?
- 3.2. What tools do you provide for interpreting the AI’s outputs?
- 3.3. Can you provide examples or case studies where your solution has been successfully implemented in a similar context to ours?



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- 3.4. How do you ensure the accuracy and reliability of your AI models over time?
- 3.5. Can you provide case studies or references from other clients regarding the performance of your solution?
- 3.6. What is the process for addressing performance shortfalls or discrepancies in validation results?
- 3.7. How do you ensure the system remains efficient and effective as data scales up?
- 3.8. What methods are used for continuous performance monitoring and improvement?

4. Professional Services

- 4.1. What level of implementation services are needed and at what cost?
- 4.2. How long do implementations usually take?
- 4.3. How many of your implementations take longer than initially proposed?
- 4.4. What level of expertise does your professional services team have in our industry?
- 4.5. What strategies does your professional services team use to ensure smooth integration with our existing systems and workflows?
- 4.6. Can you describe the onboarding process and provide details on the training programs offered for our users and technical teams?
- 4.7. What options are available for customizing professional services engagements to our specific needs in terms of project scope, timelines, and deliverables?
- 4.8. How does your professional services team incorporate user feedback into our custom solution refinement and new feature development?
- 4.9. What ongoing advisory services do you provide to ensure we remain updated on the latest advancements in AI and opportunities to further leverage your solution?
- 4.10. How does your professional services engagement model balance speed of implementation with long-term capability building within our organization?
- 4.11. Will the technical resources who have been involved in your sales process with us, and who have learned about our business and our requirements, be part of the implementation?

5. Innovation and Research

- 5.1. What ongoing research or development efforts are in place to ensure the AI solution remains at the cutting edge of technology?
- 5.2. Provide details on your future product road map and vision for new features and functionality over the next two years.
- 5.3. What is the size and profile of your R&D team, and their credentials and experience in AI and machine learning development.
- 5.4. Can you describe any collaborations with academic institutions or industry research bodies to innovate and validate your AI models?



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- 5.5. How do you engage with the broader community (e.g., developers, users, industry experts) to gather feedback and improve your AI solutions?
- 5.6. Can you provide examples of how user or community feedback has shaped the development of your AI products?

6. Support and Maintenance

- 6.1. What kind of ongoing support and maintenance do you provide?
- 6.2. How do you handle updates and improvements to the AI models?
- 6.3. What is the typical response time for technical support issues?
- 6.4. How frequently do you release software updates and what do they typically include?
- 6.5. What strategies do you employ to future-proof your AI solutions against evolving technological standards and requirements?
- 6.6. How do you support customers in upgrading or adapting AI solutions as new advancements emerge in the field?"
- 6.7. Is there a dedicated account manager or support team for our business?
- 6.8. How do you handle critical bugs or system downtimes?
- 6.9. Are there any additional costs associated with ongoing support and maintenance?
- 6.10. Can you provide training for our team to effectively use and maintain the AI system?

7. Ethics, Security, and Compliance

- 7.1. How do you ensure your AI solutions adhere to ethical AI principles, including fairness, transparency, and accountability?
- 7.2. What measures are taken to mitigate bias in your AI models, and can you provide examples of these measures in action?
- 7.3. How do you address data privacy and security in your AI solutions?
- 7.4. Is your solution compliant with industry-specific regulations and standards?

Asking these questions will not only provide insights into the vendor's technical capabilities but also their understanding of your specific business context and needs. This approach ensures that the AI solution aligns well with your business objectives and that the vendor can provide the necessary support and updates for long-term success.



Evaluating AI in Action

For businesses considering AI solutions, conducting a thorough evaluation in a real-world context can be enlightening and inform final decision-making. This section provides guidance on how to effectively evaluate AI in action, through proof of concept or pilot testing, and the key metrics to consider for assessing performance and impact.

Proof of Concept and Pilot Testing

Engaging in a proof of concept (PoC) or pilot project is a step in evaluating an AI solution. This allows businesses to see how the AI performs in a controlled, yet realistic environment. The PoC or pilot should be designed to test the AI solution against specific business needs and use cases.

Clear objectives and criteria for success should be defined at the outset along with an appropriate duration needed to determine success. Be prepared to commit to the vendor that you will make investment in their offering if success criteria are met. Because of this, make sure your criteria and the design of the PoC are well thought-out and very specific.

Establishing clear, measurable metrics is important for evaluating the success of an AI solution. These metrics should be aligned with the business objectives and could include accuracy, efficiency improvements, cost savings, or revenue generation.

User Adoption and Integration

Observing how easily the AI solution can be integrated into existing workflows and how readily it is adopted by end-users is an important aspect of evaluation. User feedback during the PoC or pilot can provide valuable insights into the usability and practicality of the AI solution.

Impact on Business Processes

Assessing the impact of the AI solution on existing business processes is often overlooked. This includes evaluating any changes in workflow efficiency, decision-making speed, and overall process improvement. The AI solution should complement and enhance existing processes, rather than disrupt them. Additionally, cultural issues and change management, often not considered from the beginning, is often an impediment to fully taking advantage of the technology, even if that technology is sound and has the potential to advance the business. The evaluation period should be the time to understand these issues and plan for their remediation in the actual roll-out.

ROI Evaluation

Business case making includes estimating the return on investment. This includes not only direct financial gains but also indirect benefits such as time savings, improved customer



satisfaction, and competitive advantages. Businesses should compare the performance and outcomes of the AI solution against the initial investment and ongoing operational costs.

Often, vendors provide their own estimates of ROI or offer to assist in doing those calculations. Clearly, they will have bias, and do not understand the nuances of your business like you do, so we do not see any reason why they should be given credence or be taken up on the offer.

Vendor Support During Evaluation

The level of support provided by the vendor during the PoC or pilot phase is indicative of their commitment to customer success. Adequate support, troubleshooting, and responsiveness are key factors in a successful evaluation.

By thoroughly evaluating AI in action, businesses can make an informed decision about whether a particular AI solution meets their needs and offers tangible value. This practical assessment helps in mitigating risks and ensures a higher probability of successful AI implementation.



Why So Many AI Initiatives Fail

The sad fact is that the majority of AI projects fail to deliver the desired results. There are many surveys on this topic, and the failure rate is typically estimated to be between 70% and 85%. Some of the failures stem from and can be avoided in the vendor selection process. Understanding the causes of failure provides good context when evaluating vendors.

Here are some examples of failure reasons:

Unclear business objectives

Often, companies jump onto the AI bandwagon without clearly defining what problem they're trying to solve or what specific goals they aim to achieve. This lack of direction leads to misaligned efforts and wasted resources.

Inadequate understanding of AI

Many organizations lack an in-depth understanding of AI capabilities and limitations. This lack of knowledge can lead to unrealistic expectations and poor decision-making regarding project scope and feasibility.

Unrealistic Expectations

Companies often have unrealistic expectations of what AI can deliver, especially in the short term. They expect AI systems to be flexible, accurate, and require little supervision out of the box. However, developing production-grade AI is an iterative process that demands continuous improvements. AI is not a silver bullet - it requires clearly defined goals aligned with business value.

Overestimation of AI Maturity

Organizations sometimes overestimate the current state of AI technology and its readiness for deployment in complex, real-world scenarios. This can result in underestimating the challenges involved in scaling AI solutions or applying them to untested use cases.

Misalignment Between AI Capabilities and Business Objectives

Often, there is a significant gap between what AI initiatives aim to achieve and the strategic goals of the organization. This misalignment can lead to projects that, even if technically successful, fail to deliver meaningful business value.

Poor Data Quality

AI models are only as good as the data used to train them. Low-quality data with errors, inconsistencies and biases leads to unreliable and untrustworthy AI systems. Ensuring high-quality, representative and unbiased data is essential but non-trivial.



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Lack of Skills and Understanding

Many companies underestimate the breadth and depth of expertise needed to develop, deploy and maintain AI systems. From data engineers to machine learning researchers and product managers, AI necessitates cross-functional teams. Lack of skills and proper understanding of AI best practices often derails projects.

Underestimating resource requirements

AI projects often require more time, budget, and manpower than initially anticipated. Failing to account for these additional resource needs can lead to project delays and cost overruns.

Difficulties in Integration & Deployment

Transitioning from prototypes to full-scale deployment poses difficulties. Integrating AI within existing infrastructure and ensuring continued model performance is complex. Lack of planning for ongoing maintenance further exacerbates these challenges resulting in failures.

Inadequate Change Management

The introduction of AI into an organization often requires substantial changes to workflows, processes, and roles. Failure to manage these changes effectively can lead to resistance among employees, resulting in underutilization or outright failure of AI initiatives.

Lack of Experimentation Culture:

Successful AI adoption requires a culture of experimentation, where failure is seen as a learning opportunity. Organizations that lack this culture may give up on AI initiatives too early or fail to iterate towards more effective solutions.

Neglecting Ethics

Unethical use of AI which fails to account for fairness, accountability and transparency has backfired terribly for many organizations. Ensuring AI aligns with ethical values requires foresight and is a key determinant of long-term success.

While many of these reasons do not have to do directly to the vendor and vendor selection, having these in mind during the vendor vetting process will mitigate the risk of failure.



Conclusion

This guide has provided ideas and directions to navigate the complex landscape of AI technology offerings. The importance of evaluating AI claims with a discerning eye has been underscored, highlighting the need for businesses to not only understand AI's potential but also its limitations and the specific contexts in which it can be effectively applied.

Businesses are encouraged to approach AI investments with diligence, critical thinking, and informed skepticism. By understanding the common claims and marketing tactics, recognizing credible AI claims through key indicators, asking the right questions to vendors, and effectively evaluating AI in action, businesses can make more informed decisions and capitalize on the true potential of AI technologies.

First Analytics assists our clients through this journey, offering expertise and guidance in building AI capabilities and competencies. Our goal is to ensure that that investments in AI technologies are sound, effective, and aligned with business objectives.

You may explore various of our offerings and advisory services related to AI at our website, www.firstanalytics.com. Some of these, with webpage links, are listed in the table below.

Analytics Strategy ¹	Progress upward within the analytics maturity model.
Collaborative Analytics Lab ²	A managed sandbox for guided testing of concepts and technologies.
Analytics Platforms ³	Cloud technologies and software for end-to-end analytics
Generative AI ⁴	Learn what it's all about and how to use it.
Machine Learning ⁵	Detect, discover, and predict at scale.
Analytics Enablement ⁶	Boost your team's competencies.

¹ <https://firstanalytics.com/offerings/analytics-strategy/>

² <https://firstanalytics.com/offerings/collaborative-analytics-lab/>

³ <https://firstanalytics.com/offerings/analytics-platforms/>

⁴ <https://firstanalytics.com/offerings/generative-ai/>

⁵ <https://firstanalytics.com/offerings/machine-learning/>

⁶ <https://firstanalytics.com/offerings/analytics-enablement/>



About First Analytics

First Analytics designs and implements predictive analytics and machine learning solutions. We span multiple industries and applications. With an enabling engagement model, we team up with our clients to build their in-house capabilities and systems.

We have a long and successful history of helping our clients with analytics, always with a data-driven approach. Visit our [website](#) to view our [offerings](#) and [case studies](#) and to learn more about how we can help your company leverage the power of advanced analytics with statistical modeling, machine learning and artificial intelligence.

