

BEST PRACTICE REPORT

Know Your Customers: Combining Structured And Unstructured Data For Deeper Insights

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Summary

Organizations are increasingly combining structured and unstructured data to gain deeper customer insights. Structured data explains what happened, while unstructured data reveals why, capturing emotions, motivations, and context from sources like text, images, and video. Together, they provide a fuller view of customer behavior, enabling better personalization and decision-making. However, integration requires significant effort in cleaning, labeling, and managing unstructured data, as well as addressing channel bias and aligning strategies with business goals. Success depends on a clear data and AI strategy, thoughtful tech choices, and incremental developments.

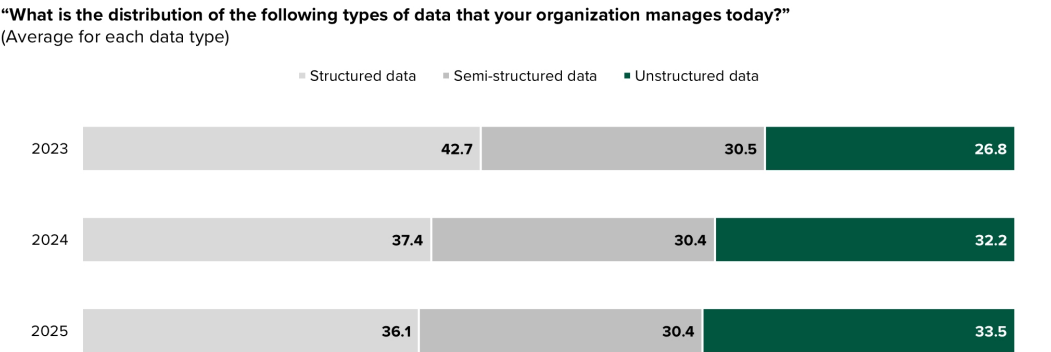
Data And AI Leaders Treat Unstructured Data As A Core Asset

Structured data has long served as the foundational bedrock of customer intelligence, answering questions about what customers are doing, when they're doing it, and what they're most likely going to do next. It powers predictive modeling, enabling organizations to optimize campaigns, personalize offers, and forecast demand with increasing precision. Yet, structured analytics falls short in revealing the underlying motivations and emotional drivers behind modeled customer activity: Why are they doing what they are doing? How do they feel about what the company is doing?

To answer such questions, organizations are increasingly including unstructured data in their managed data assets (see Figure 1). Unstructured data insights aren't limited to sentiments and preferences from text and speech data; they also include contextual, visual, and operational information found in images, video, and sensors. And while historically these data types have been difficult to process and manage, advancements in data management, data processing, and AI are facilitating the inclusion of unstructured data in customer data analysis. However, combining structured and unstructured data isn't as common or as easy as customer analytics leaders might think. While 72% of data and analytics decision-makers report that they leverage all available data to generate insights (which may include internal and external, structured and unstructured data), only 23% say their organizations frequently rely on unstructured data to serve customer experience teams and initiatives.

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Figure 1
Distribution Of Data Types Managed By Organizations (2023 To 2025)



Base: 1,445 to 2,692 data and analytics decision-makers
Source: Forrester’s Data And Analytics Survey, 2023; Forrester’s State Of Data, Analytics, Measurement, and Insights Survey, 2024; and Forrester’s Data And Analytics Survey, 2025
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Find Richer, More Actionable Insights With Structured Plus Unstructured Data

Enterprises find new, sometimes unexpected insights when they use both structured and unstructured data in analysis. For example, Domino’s digital transformation is frequently praised for its relentless focus on delivery speed — an insight from structured data. However, a large number of consumers were comparing Domino’s pizza to cardboard in online comments. As former Domino’s CEO Patrick Doyle put it, “[We] had built the whole brand around fast and reliable delivery, and ... we realized that everyone in the world who wanted fast, convenient pizza was already buying from us, and the people who wanted a great pie simply were not.” That insight, buried in unstructured feedback, sparked the now-famous Pizza Turnaround campaign. Include both structured and unstructured data in your analytics strategy because:

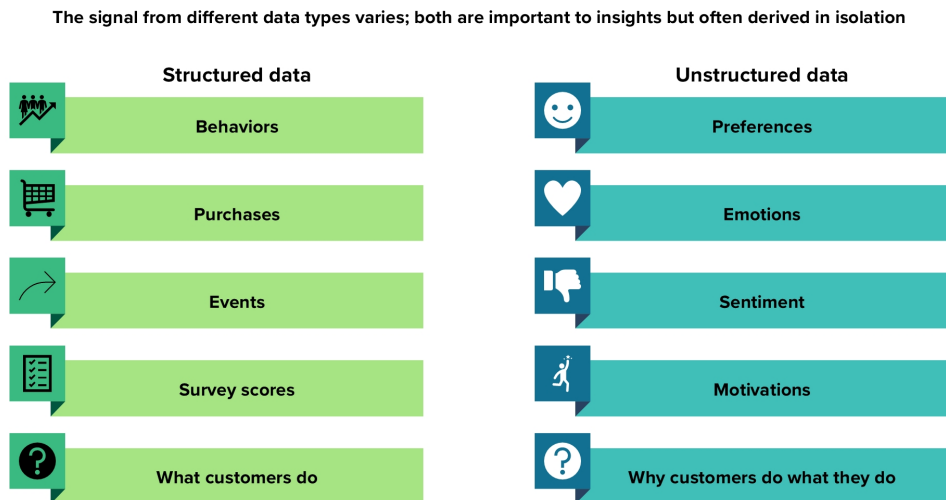
- **Structured data alone misses the human signal.** Structured data reveals *what* happened, but not *why*. As one analytics leader put it, “Structured data gives you 180 degrees. Unstructured data gets you closer to 360.” Without unstructured data, you risk missing the signals that drive loyalty, churn, or dissatisfaction. For example, analytics firm EXL helped insurers reduce underwriting time from 13 days to under four hours by integrating adjuster notes (unstructured data) with structured policy data. Other organizations have found that verbatim comments

surfaced pain points they weren't even asking about. If you're only looking at structured data, you're only seeing part of the picture.

- **Unstructured data alone lacks precision.** While undeniably rich in context, unstructured data presents its own challenges. Lacking a predefined model or schema, unstructured data can be exceptionally difficult to quantify, organize, and analyze at scale. Extracting precise, actionable insights or directly linking unstructured data to measurable business outcomes is a daunting task. For instance, sentiment analysis can't pinpoint the specific product feature, channel interaction, or moment that triggered the sentiment without proper entity and sentiment extraction. What should be a valuable signal becomes unquantifiable noise. Unstructured data needs structure imposed on it to be useful, whether that's timestamps, customer IDs, or metadata (see Figure 2).

Figure 2

Bridging Structured And Unstructured Data For Deeper Customer Insights



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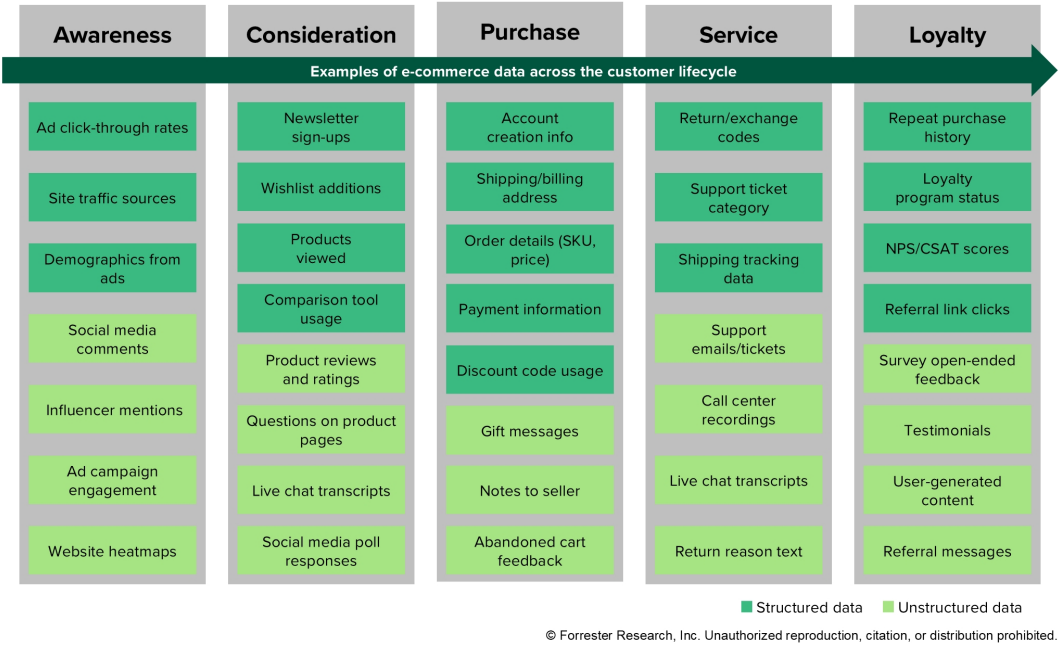
Unified Data Wins, But Only If You Do The Work

You can't just dump your structured and unstructured data in one big pile and hope for the best. Integrating unstructured data into your analyses requires investment and effort, especially since unstructured data has long been under-managed. And while it is possible to build one-off proof-of-concept solutions, scaling requires ongoing data processing and insights management. The good news is that setting the right

foundations now will help accelerate time to value for future initiatives. Consider the following as necessary starting points for your unstructured data strategy:

- **No shortcuts allowed: Manage your unstructured data.** Unstructured data is messy, and data and analytics pros often underestimate the effort required to clean, label, and structure it. One provider shared that a client thought they had 63 sentiment categories in their data; when the work was complete, they discovered 450. That's not just a labeling issue — it's a signal management problem. AI can help by collecting and annotating the data. For example, Australian mental health organization Beyond Blue built a PII redaction service to ensure ethical use before analysis. Treat unstructured data with the same rigor you apply to structured data.
- **Consolidate journeys.** Customer journeys don't respect organizational boundaries, yet most companies manage data by channel or function, which makes it hard to connect the dots. CX teams don't always talk to contact center teams, and retailers can't always link AR engagement to actual sales. You need a centralized strategy that stitches journeys together (see Figure 3). An international supermarket chain combines feedback across online, in-store, and loyalty to surface ecosystem-level insights. If you want to understand the full customer experience, you need to consolidate the data that reflects it.
- **Address channel bias.** Channel bias can distort your insights if you're not careful. Devyani Handa, listening engagement manager at Woolworths Group, warns "volume doesn't equal importance." Call center data is a common culprit. It's appealing because it's readily available, rich in context, and represents the emotional culmination of a customer's entire journey. However, it's volume, ubiquity, and bias toward customers who have had a bad experience can lead to an overrepresentation of experience issues that are not major customer pain points.

Figure 3
E-Commerce Data Types Across The Customer Lifecycle



Net Promoter Score (NPSSM)

New Technology Is A Powerful Enabler, But Not An Approach

Data profiles are as unique to an organization as fingerprints. This uniqueness is further amplified when it comes to unstructured data, where the lack of standardization in formats, collection methods, and management practices makes every case even more distinct. Sunil Rao, head of analytics at Merkle notes that this forces much of today’s integration work to be bespoke. Given this, when building the foundation for a blended data strategy, it can be tempting to lean heavily on new AI approaches to “do the work.” However, our research shows that while these tools are often indispensable, their effectiveness varies widely depending on the business context.

- **AI is improving unstructured data preparation and processing.** A combination of traditional and generative AI capabilities have opened the door to faster and more intuitive ways to extract insights from unstructured data in the form of text, speech, images, and video. Language models are helping firms move from vague themes

like “long wait” to precise, actionable insights like “long wait at branch during account setup.” Beyond insights extraction, new and emerging AI innovations help with foundational elements of unstructured data analysis. Customer analytics firms, such as EXL, help their clients by deploying agentic frameworks where multiple AI agents collaborate to define data elements, write queries, and solve business problems.

- **Newer isn’t always better.** While LLMs are a disruptor for natural language processing (NLP), classic NLP isn’t dead. For many organizations, using a 70 billion parameter LLM for categorizing product reviews is excessive, adding cost without proportional value. Instead, many organizations, such as mental health service provider Beyond Blue, rely on a layered approach, citing success in using a three-stage pipeline: rule-based pattern-matching (regex), transformer models (such as BERT), and LLMs. Mental health professionals, for example, assign a clinical definition to the term ‘burnout,’ but many people use it colloquially to mean ‘very tired.’ This linguistic nuance helps companies like Beyond Blue determine when a quick intervention is warranted and when not.
- **Make tech selections based on your business.** There is currently no one-size-fits-all tech stack for unstructured data. Knowledge graphs, for instance, can be valuable in high-touch, low-volume industries like luxury retail and wealth advisory, while vector databases are more appropriate for applications like large-scale retail (e.g., Walmart). Analytics firms like Tredence are leveraging approaches like Spanner Graph for their clients, reducing compute costs while enabling scalable knowledge graph applications. And some companies find ample success with SQL databases and simple lookups. Consider the nature of your business, customer interactions, data maturity, technological feasibility, and scale as you make technology selections or adopt analytical approaches.

Strategy And Execution Matter

Integrating unstructured data isn’t just a technical challenge — it’s a strategic one. Success depends on leadership, agility, and clarity of purpose. To succeed when you combine structured and unstructured data, remember that:

- **Business impact is what makes insights meaningful.** Unstructured data is full of recurring signals — phrases in support tickets, themes in product reviews, or notes in case files — but these signals are only meaningful when interpreted in the context of your business. A complaint about “confusion” could mean something very different depending on whether a customer is onboarding, renewing, or at risk of churn. In every domain, lifecycle context transforms unstructured

observations into insights that are both relevant and actionable.

- **A strong data and AI strategy is the true accelerator.** Data and AI pros often turn to technology to speed up the insights value cycle. But without a clear strategy, even the best tools fall short. Jonathan Carter, head of data and intelligence services at Concentrix, warns that too many organizations are led by CIOs focused on tech rather than customer value. Data strategy must align with business goals such as those in marketing or CX. That means routing feedback to the right teams and partnering across functions. Or in the case of a huge retailer such as Woolworths, Handa, who leads voice-of-the-customer (VoC) CX programs, attributes much of the unstructured data integration success to their partnership with their data and analytics teams.
- **Over-engineering solutions impedes progress.** Many organizations stall in endless architecture debates before making any real progress. EXL's Sarat Varanasi advises clients to avoid overengineering solutions. For example, Verizon's Kothai Sriramachandran warns against overloading predictive churn models with excessive inputs from both structured and unstructured sources. The incremental benefit might not justify the complexity and effort required.
- **Start with what you know and work toward areas of greater uncertainty.** Anees Merchant from C5i suggests beginning with the "known knowns" before probabilistic identity matching. Unstructured data from social media or other channels, Merchant says, has many "tollgates" where a customer reveals to a brand who they are. These moments, Merchant says, are powerful starting points for bringing in reliable unstructured data signals, even though many data and analytics teams often neglect them in favor of chasing modeled behaviors.

Supplemental Material

Companies We Interviewed

We would like to thank the individuals from the following companies who generously gave their time during the research for this report.

Beyond Blue

C5i

Concentrix

EXL

Medallia

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