Hype Cycle for Customer Experience Analytics, 2022

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By Analyst(s): Nate Novosel, Melissa Davis, David Norrie, Radu Miclaus

Initiatives: Analytics, BI and Data Science Solutions; Evolve Technology and Process Capabilities to Support D&A

Customer experience analytics adoption has been fueled by advancements in data, analytics and AI, and connections of diverse data sources, tempered by trends in data privacy and ethics. This Hype Cycle helps D&A leaders prioritize investments based on the maturity and benefits of the technologies.

Additional Perspectives

- Summary Translation: Hype Cycle for Customer Experience Analytics, 2022 (11 August 2022)

Analysis

What You Need to Know

The global pandemic and global disruptions have accelerated digitalization efforts in customer experience (CX). As such, organizations are focusing more on maturing their more advanced analytical capabilities while driving forward their data privacy and ethics programs.

Data privacy regulations and innovations have continued to evolve, with more tailored opt-in style customer data preferences becoming more prevalent. This creates a heightened tension of more holistic insights into the omnichannel customer experience against more conscious capture, protection and use of that data. As a result, companies face the difficult balancing act of respecting their customers' data usage preferences while meeting their expectations for truly personalized, effortless experiences.

Alongside this Hype Cycle, there are many Hype Cycles for 2022 that cover advances in data and analytics, digital transformation, user experience and customer engagement:

- Hype Cycle for Customer Service and Support Technologies, 2022
- Hype Cycle for CRM Sales Technology, 2022
- Hype Cycle for Digital Commerce, 2022
- Hype Cycle for Digital Marketing, 2022
- Hype Cycle for Analytics and Business Intelligence, 2022
- Hype Cycle for Privacy, 2022
- Hype Cycle for User Experience, 2022

The Hype Cycle

Key Themes

Enhanced Customer Understanding and Engagement

Organizations have evolved from a siloed view of a customer within a channel or department to providing increasingly coordinated and intelligent omnichannel experiences across the customer journey. Organizations are striving for a complete view of the customer so that each touchpoint along their journey factors into their end-to-end experience.

Related innovations are the digital twin of a customer; customer technology platform; multiexperience analytics; digital experience analytics; and customer journey analytics.

Increased Contextualized Experiences

Advanced analytical capabilities enable organizations to go above and beyond what customers can articulate to identify previously unidentified experience enhancement opportunities. Incorporating real-time contextual data around customers' location, life stage, point in the customer journey, previous interactions and emotional state can help organizations understand, empathize and engage with those customers.

Related innovations are augmented analytics for CX; continuous intelligence; personalization engines; customer journey analytics; emotion AI; and customer psychographics.

Digital Ethics and Data Privacy

Given the growing customer concern regarding data collection practices, evolving privacy regulations and rising importance of ethical behavior in companies, organizations are accelerating their ethics and privacy efforts. Less can be more when it comes to customer data collection, and many organizations have to make difficult trade-offs as they implement their programs.

Related innovations are digital ethics; privacy by design; differential privacy; and personification.

Market Collisions

Enterprise application vendors are adding depth and specialization of their offerings (e.g., Adobe and Salesforce moving into the CDP and customer service analytics spaces with identity resolution and dynamic audience segmentation). In parallel, niche players have started adding capabilities adjacent to their markets (e.g., voice of the customer [VoC] and customer service suite vendors incorporating natural language processing [NLP], speech, text, social and journey analytics into their core customer survey products).

Related innovations are product analytics; digital experience analytics; graph analytics for CX; augmented analytics for CX; and VoC applications.

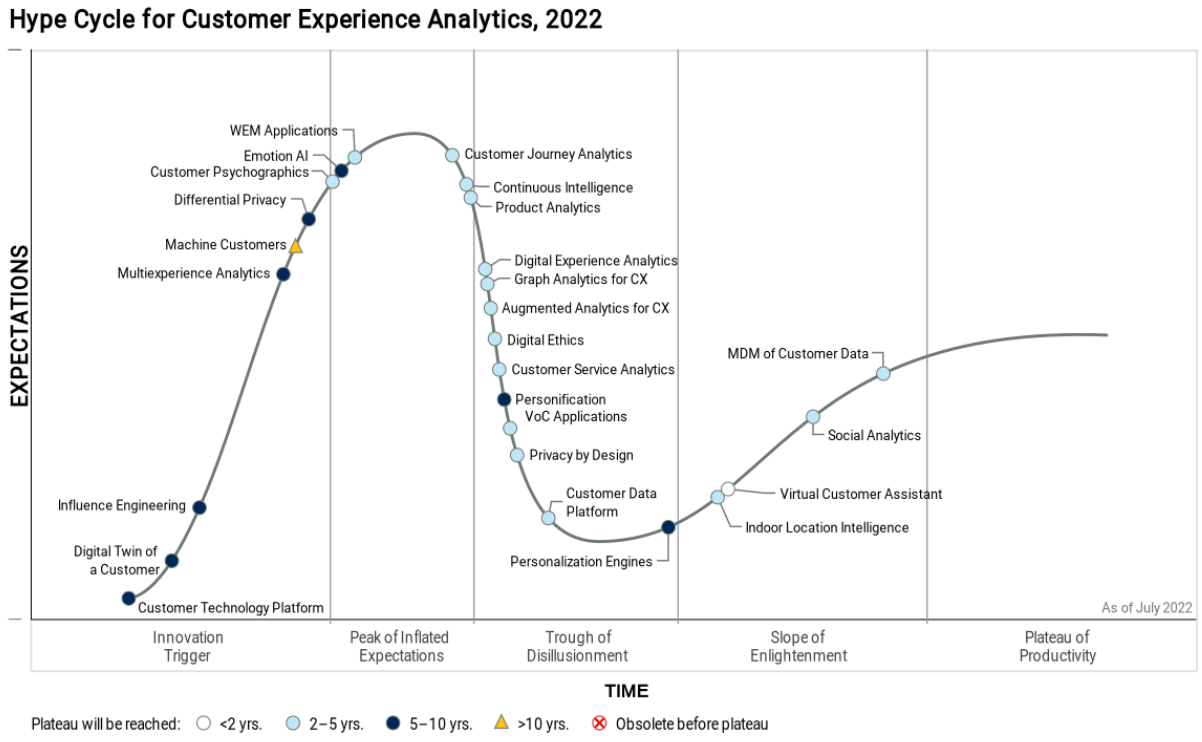
New to the Hype Cycle:

- Digital twin of a customer (DToC) — Organizations can use DToCs to simulate how customers will react to provide them with better experiences.
- Customer technology platform — This approach enables an organization to align the "outside-in" view of customer experience with the "inside-out" delivery of the organization's CRM vision and strategy.
- Personification — Personification allows marketing, CX and D&A leaders to deliver targeted digital experiences while ensuring the privacy of user-level data.

Fast Movers:

- Ethical data use — Digital ethics, privacy by design and differential privacy have accelerated significantly as a response to regulatory and customer demands for transparency in data capture and use.
- Prime D&A use cases in CX — Continuous intelligence, augmented analytics for CX and graph analytics for CX have accelerated, indicating a maturation of the customer experience analytics into more advanced, high-value use cases.

Figure 1: Hype Cycle for Customer Experience Analytics, 2022



Source: Gartner (July 2022)

The Priority Matrix

The Priority Matrix shows the benefit levels and the number of years to mainstream adoption for the technologies presented in this Hype Cycle.

Transformational innovations have a significant impact on an organization's business models, driving a need for new strategies. Continuous intelligence, for example, can fundamentally alter the design of business processes and the data and analytics available to support decision making. Until recently, only a few companies had been able to afford sophisticated integrated systems with continuous intelligence capabilities. However, the technology required for custom-built, integrated continuous intelligence is now more affordable.

High-benefit innovations are less likely to change an organization's business model but have a significant impact on CX analytics programs. Many of these innovations — such as augmented analytics for CX and indoor location intelligence — will yield high benefits during the next two to five years.

Although it may take five to 10 years for them to achieve mainstream adoption, innovations such as digital twin of a customer are more strategic, requiring long-term planning and investment.

Few analytics technologies are more than 10 years out; by their nature, they are more likely to reflect immediate market needs. The exceptions are those with broader focus and capabilities, such as machine customers.

Data and analytics leaders should partner with business leaders to evaluate the emerging and mature vendors for specific business cases to determine the costs, benefits and associated risks.

Table 1: Priority Matrix for Customer Experience Analytics, 2022

(Enlarged table in Appendix)

Benefit ↓	Years to Mainstream Adoption: Less Than 2 Years ↓	2 - 5 Years ↓	5 - 10 Years ↓	More Than 10 Years ↓
Transformational		Continuous Intelligence	Customer Technology Platform Digital Twin of a Customer Emotion AI Influence Engineering	
High	Virtual Customer Assistant	Augmented Analytics for CX Customer Journey Analytics Customer Service Analytics Digital Ethics Indoor Location Intelligence MDM of Customer Data VoC Applications WEM Applications	Differential Privacy Personalization Engines Personification	Machine Customers
Moderate		Customer Data Platform Customer Psychographics Digital Experience Analytics Graph Analytics for CX Privacy by Design Product Analytics Social Analytics	Multiexperience Analytics	
Low				

Source: Gartner (July 2022)

Off the Hype Cycle

Renamed:

- Digital product analytics has been renamed product analytics.

Removed:

- Outdoor location intelligence
- Customer engagement hub

On the Rise

Customer Technology Platform

Analysis By: Gene Alvarez, Mike Lowndes, Saul Brand, Andrew Gianni

Benefit Rating: Transformational

Market Penetration: Less than 1% of target audience

Maturity: Embryonic

Definition:

The customer technology platform (CTP) approach enables an organization to align customers' "outside-in" view of the organization's customer experience with the overall technology needed to support the "inside-out" delivery of the organization's CX vision and strategy. This will enable the organization to build a CTP that supports a holistic and complete view of the customer experience.

Why This Is Important

The customer technology platform business capabilities and technology reference models will enable organizations to:

- Build a bridge from their CX CORE objectives to the delivery of their CRM strategy.
- Determine which systems need to work with each other to support the delivery of the organization's customer experience (CX) and CRM strategy in order to create positive customer sentiment.
- Determine how to make improvements to their CRM systems in order to move the organization toward a CTP platform.

Business Impact

Digitalization of the customer experience has exposed process gaps and disconnected customer-facing processes to customers. This is due to CRM applications that were implemented solely to automate individual processes. Application leaders need to address these gaps by viewing CRM applications in the context of CX-centric application strategy that goes beyond mere CRM. Using a CTP approach to CRM applications can resolve these customer facing gaps and lead to improved customer experiences.

Drivers

- Delivery of positive customer experience as a part of digital transformation is a key differentiator for any organization.
- Digital transformation of customer-facing processes has exposed disconnected CRM applications, leaving the customer to be the coordinator of their experience across an organization's points of interaction (POIs). Examples of POIs are call centers, chatbots, websites, mobile applications, stores and branches. As an example of this flaw, imagine a homeowner is contacted and told that their cellular 3G backup for their alarm system will sunset. This requires a system upgrade, and a field service visit must be scheduled. The customer schedules the visit. On the day of the visit, the field service tech arrives and does not know the customer system and does not have the correct parts or people to do the upgrade. This requires the customer to reschedule the upgrade and work with the organization to determine what assets are in the home. It is at this point the customer is now managing the process and not the provider. Events like these happen in many industries due to disconnected applications and a lack of an integrated view of the customer and the products and services that they have.
- Organizations seeking to scale their customer experience capabilities are using more customer-facing technologies and applications. These organizations are seeking to provide a relevant and integrated customer experience that is intelligently coordinated across all POIs.
- Organizations seeking to provide integrated experience such as "campaign to contract" have recognized that they need to integrate applications (such as campaign management, lead management, salesforce automation and configure, price and quote) to enable intelligent coordinated experiences across all POIs.

Obstacles

- Major investments in CRM applications that are already live and operational in organizations are making it hard to integrate CRM applications into great customer experiences.
- It can be difficult to determine how to integrate CRM applications with the organization's entire IT portfolio.
- Investment in strategic vendor relationships has made the integration of many CRM applications a requirement that the vendors must support. However, organizations may not be able to wait until then, due to a need to improve their customer experiences today.

- Customer dissatisfaction or frustration can come from organizational inertia. In this case, customers are exposed to new ways of doing things from competitors or organizations in other industries, and they view the organization as behind in helping customers with their "job to be done." This organizational inertia can come from a variety of sources, such as a mindset that change is a risk rather than a tool that can be used to improve the customer's experience.

User Recommendations

- Use Gartner's CX CORE approach to first build the organization's business capability model. This model will determine what business capabilities are needed to support the integration of an organization's business model and its operating model.
- Avoid misalignment of CRM applications and technology and the organization's business model (for example, using self-check-out in a luxury store environment). The advantage of using this approach is that the organization's CRM applications and technology will be properly aligned with the organization's CX objectives.
- Use a CTP approach to identify which key CRM applications and other technology needs to be intelligently coordinated to deliver the right customer experience.
- Use a CTP approach to determine what needs to be changed when the organization faces a customer experience disruption in its market from competitors.
- Use a CX-CORE-driven approach to design customer experiences. This must be coupled with using a CTP architectural approach to ensure that all CRM applications and technology are aligned to the organization's CX objectives.

Gartner Recommended Reading

Break Out of the Customer Management Industrial Complex With Gartner's CX CORE Model

Enable Great Customer Experiences Using Gartner's Customer Experience CORE Model

Digital Twin of a Customer

Analysis By: Melissa Hilbert, Michelle DeClue

Benefit Rating: Transformational

Market Penetration: 1% to 5% of target audience

Maturity: Embryonic

Definition:

A digital twin of a customer (DToC) is a dynamic virtual representation of a customer that simulates and learns to emulate and anticipate behavior. Customers can be individuals, personas, groups of people or machines.

Why This Is Important

DToCs help organizations of all sizes better understand their customers and anticipate their behavior. They increase efficiency and provide a personalized, empathetic service to customers, many of whose buying habits have changed during a period of upheaval.

A DToC can be used to modify and enhance the customer experience (CX) and support new digitalization efforts, products, services and opportunities. It can be an engine of transformation and disruption.

Business Impact

Just as digital twins of a product enable organizations to anticipate how a physical product will perform or will need to be maintained in different conditions, organizations can use DToCs to simulate how a customer will react, given a specific set of ecosystem parameters, conditions, and control or input signals. DToCs help organizations selling products or services provide customers with better experiences, which results in increased revenue and lasting customer relationships.

Drivers

DToCs will help organizations:

- Gain critical insights into customers.
- Increase revenue by enabling new ways to serve or capture customers, as well as by facilitating new data-driven business models.
- Predict and simulate behaviors with a view to making products, services, promotions and business campaigns more successful and reducing unnecessary costs of failure.
- Improve customer engagement, customer retention, customer lifetime value and company growth.
- Reduce churn, product failure and engagement abandonment.

Obstacles

- Privacy and cyber-risk concerns may lengthen the time it takes DToCs to mature, and increase legal and regulatory risk.
- Organizations need competency in machine learning algorithms and likely some staff with data science skills to build or manage DToCs.
- The technology behind digital twins has focused on organizations and products. A customer focus is only just emerging, and the lack of clear KPIs and other measures of success limits the potential use of DToCs.
- As customers may be wary, and tired, of having data about them collected, organizations need to establish trust. If customers are to agree to share information with organizations via DToC programs, they will want transparency about what data will be collected, how it will be used, and what privacy and data controls will apply. Importantly, they will also want to know how participation will benefit them by providing, for example, a more personalized experience, more relevant products and services, convenience and exclusive offers.

User Recommendations

- Align your activities with customers' privacy and cybersecurity concerns, based on the availability of customer assets. Avoid appearing creepy.
- Identify use cases for which DToCs could help deliver a better CX, and for which suitable data is available, by examining customer journeys and failure points.
- Whether you choose to build or buy a DToC, start by running a pilot and comparing results with and without a DToC over a statistically significant period using statistically significant data.
- Define the benefits to customers and establish trust by explaining why they would want a digital twin, and how they can use one to improve their experience of your products and services. Also explain how and to what extent they can control attribution and data usage, or cancel their digital twin altogether. This will provide clear visibility to customers, not just internal guidance.
- Establish a trust center to house privacy and security documentation, as well as documented expectations.

Sample Vendors

Absolutdata; Arrayworks; Fetch.ai; Salesforce; TCS

Gartner Recommended Reading

Gartner Business Quarterly — 2Q22

Survey Analysis: Digital Twin Expansion Plans Signal New Software Skills Investments Are Required

Use 4 Building Blocks for Successful Digital Twin Design

Toolkit: 5 Digital Twin/IoT Project Success Drivers

21 Lessons From Successful Digital Twin Implementations for Manufacturing

Influence Engineering

Analysis By: Andrew Frank

Benefit Rating: Transformational

Market Penetration: Less than 1% of target audience

Maturity: Embryonic

Definition:

Influence engineering (IE) refers to the production of algorithms designed to automate elements of digital experience that guide user choices at scale by learning and applying techniques of behavioral science.

Why This Is Important

As established personalization techniques wane under privacy restrictions, new data sources and machine learning (ML) capabilities are enabling new systems of influence. Breakthroughs in areas such as emotion detection, content generation and edge computing are automating influential aspects of communication, for better or worse. Organizations need new forms of governance to oversee research and deployment of artificial intelligence (AI) programs focused on affecting behavior at scale.

Business Impact

As governments mobilize to address potential harms from algorithmic manipulation of behavior, corporations are striving to establish customer engagement with digital business initiatives under volatile social and market conditions. Alongside profitability incentives, increasing demands to address environmental, social and governance (ESG) goals put pressure on business leaders. As IE techniques mature, enterprise viability will increasingly depend on the ability to wield technology that shapes opinions and choices in beneficial ways.

Drivers

Evidence of AI's power in marketing:

- Investments and breakthroughs in AI from global platform providers (such as Amazon, Apple, Facebook and Google) and martech vendors (such as Adobe, Oracle and Salesforce) remove barriers to AI adoption in marketing.
- The suppression of personal data for marketing alongside the rise of AI to assess contextual response anonymously is altering the data foundations of advertising and content marketing.
- Deepfakes, chatbots and metaverse avatars illustrate AI's ability to synthesize lifelike experiences.
- Building on behavioral economics, academic work affirms the capacity of ML to influence behavior, both in the lab and in the field.

Commercial goals:

- Pressure is mounting on marketing organizations to deliver better results with lower costs and in the context of losing key data sources such as browser cookies and device IDs.
- The shift in consumer behavior toward digital channels for work and commerce expands opportunities for automation and optimization of experience elements.

Social goals:

- As pressure mounts on corporations to address societal impacts, success often depends on nudging consumers toward more sustainable and ethically sourced product choices.

- The explosion of fake and toxic content in social media creates incentives for brands to use influence techniques to identify and debunk misinformation and establish a stable base of common values.

Obstacles

- Popular backlash against perceived manipulative technology has been harsh. Extreme care is needed to avoid any association with subterfuge in IE applications.
- Proposed regulations with nebulous scope, such as the EU's AI Act, create new legal hazards for companies contemplating use of IE.
- The real potential for AI to exploit people's vulnerabilities to encourage inferior choices or reinforce destructive behaviors or biases — even if this was not the intention of the designers — creates moral risks that are poorly understood.
- Lack of established approaches or tools creates confusion. The market is characterized by divergent approaches and conflicting claims as investors and entrepreneurs seek to exploit a building wave of hype.
- Skepticism regarding long-term effectiveness is warranted. The effects of these technologies in large-scale competitive environments remain speculative, and many experts question assumptions of viability.

User Recommendations

- Translate statements of purpose into measurable goals used to train IE algorithms.
- Establish or locate a governance structure within your organization where opportunities for IE are best investigated. Discover use cases and debate the goals and extent of potential commitments. Solicit broad, cross-functional representation and ethics committee participation.
- Recruit friendly user test groups for research and experimental projects, or work with providers that do such projects. Be transparent about goals and technologies. Assume that all research activities require advance informed consent.
- Embed longer-term business metrics in operational dashboards and monitoring processes used to measure and motivate performance. Make opinion sampling and goodwill measurement regular features of your organization's health check.
- Build your organization's knowledge center for IE, and include organizational learning and assessment of competitors' and platform providers' activities. Play defense as well as offense.

Gartner Recommended Reading

Influence Engineering: A Behavioral Marketing Trend, 2022

Digital Marketing Leaders Need to Take a Bigger Role in Ethical Oversight of AI/ML

Use Behavioral Economics to Influence Security Behavior and Individual Decisions

Focus Your Journey Orchestration Business Case With Size-of-Opportunity Modeling

Multiexperience Analytics

Analysis By: Austin Kronz, David Pidsley

Benefit Rating: Moderate

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Definition:

Multiexperience analytics is the alignment of user interfaces, interaction modalities and analytics capabilities that optimize a user's experience of analytics content consumption for a given decision-making process. The increase in possible combinations of approaches is due to advancements in technologies such as augmented analytics capabilities and data storytelling.

Why This Is Important

Much like the customized user experiences we are used to in our day-to-day interactions with technology, consumer-oriented analytics experiences will be needed to drive adoption of data-driven decisions. Organizations must be able to deliver the most relevant, contextualized and consumable analytics outputs possible. This requires tapping into the unique intersection of various devices, interaction modalities and analytics capabilities that can augment users' ability to consume insights.

Business Impact

Transitioning from static analytics outputs to more dynamic contextualized insights, embedded or automated, means analytics can be delivered with increased relevance closer to the point of decision. Aligning analytics capabilities with their optimal interface and consumption modality will impact our approach of measuring analytics and BI adoption. Quantifying adoption will need to shift from identifying how many users leverage a tool to how many people consult data when making a decision and what pathway of capabilities they use to arrive there.

Drivers

- Multiexperience is closely coupled to advancements in both hardware, in the form of interfaces such as desktops, mobile devices, wearable devices, virtual reality simulators or smart speakers; and software, in the form of augmented analytics and data storytelling capabilities.
- The various modalities in which we can interact with data (click, touch, voice, chat, etc.) are generally accepted, yet organizations are only scratching the surface when it comes to maximizing the cross section of these interfaces and capabilities. Many organizations are already using embedded forms of analytics, a starting point for multiexperience.
- Because capabilities such as augmented and automated data storytelling are almost entirely enabled by cloud-based architectures, adoption will be accelerated proportionate to organizations' movement to cloud-based data and analytics tools.

Obstacles

- While there are a wide variety of possibilities when it comes to delivering multiexperience analytics to users, the roles and skills needed to compose the various elements together will be an ongoing challenge.
- D&A resources, whose time is already scarce, must learn how to maximize the combination of new interaction modalities and analytics capabilities. The time needed for this will be in direct competition with the time needed for day-to-day analytics requests that many D&A teams are already inundated with.
- Many organizations are already tasked with consolidating analytics platforms. While unique best-of-breed user experiences may be ideal, potential customers may default to using existing analytics and BI platforms that will add such augmented capabilities.

User Recommendations

- Account for multiexperience approaches to consuming data by aligning the right analytic capability to the right user interface and experience.
- As movement to the cloud continues, evaluate where new consumption mechanisms could add value to decision-making processes, rather than simply lifting and shifting the same traditional analytics outputs to a modern platform.
- Evaluate, on a regular basis, your existing analytics and BI tools and innovative startups offering new augmented user experiences beyond the predefined dashboard.
- Place analytics capabilities as close to the relevant business decision maker as possible by evaluating when analytics and BI platform capabilities are best embedded in line with other business applications or workflows.
- Take a data-driven approach to analytics adoption by leveraging the usage data available within today's analytics and BI platforms. If not prebuilt, discuss with vendors the options available to tap into such data.

Gartner Recommended Reading

Multiexperience Will Be the New Normal for Consuming Analytics Content in the Augmented Era

Top Trends in Data and Analytics, 2022

Machine Customers

Analysis By: Don Scheibenreif, Mark Raskino

Benefit Rating: High

Market Penetration: Less than 1% of target audience

Maturity: Emerging

Definition:

Machine customers are nonhuman economic actors that obtain goods or services in exchange for payment. Examples include virtual personal assistants, smart appliances, connected cars and IoT-enabled factory equipment. Machine customers act on behalf of a human customer or organization.

Why This Is Important

Currently, there are more internet-connected machines with the potential to act as customers than humans on the planet. We expect the number of machines and pervasive artificial intelligence (AI), such as virtual personal assistants, with this capability to steadily rise over time. Machines are increasingly gaining the capacity to buy, sell and request service. Further, machine customers will advance beyond the role of simple informers to advisors and, ultimately, decision makers.

Business Impact

Over time, trillions of dollars will be in control of nonhuman customers. This will result in new opportunities for revenue, efficiencies and managing customer relationships. Digital-savvy business leaders seeking new growth horizons will need to reimagine both their operating models and business models to take advantage of this ultimate emerging market, wherein the number of machine customers will dwarf the number of human customers on the planet.

Drivers

- According to our research, both CEOs and CIOs agree on the potential of this emerging trend: 76% of CIOs and 61% of CEOs we surveyed in 2019 believe demand from machine customers will become significant in their industry by 2030. On average, these leaders believe at least 21% of their revenue will come from machine customers by 2030.
- Currently, most machines simply inform or make simple recommendations, but we are seeing some examples of machines emerging as more complex customers. For example, HP Instant Ink is a service that enables connected printers to automatically order their own ink when supplies run low. Some Tesla cars already order their own spare parts, and Walmart has patented grocery automatic reordering based on home Internet of Things (IoT) sensing.
- In B2B, U.S.-based AutoCrib manufactures smart vending machines that proactively place orders when stocks run low to increase productivity and efficiency by automating lengthy and error-prone manual ordering. Thinking forward, an autonomous vehicle could determine what parking garage to take its human passengers to, based on criteria such as distance from destination, price, online review score, parking space dimensions and valet options.
- Machine customers have the potential to generate new revenue opportunities, increase productivity and efficiency, improve health/well-being and enhance security of physical assets and people.

Obstacles

Machine customers across industries will not reach the Plateau of Productivity for at least 10 years on account of the following obstacles:

- **Operating model** — How do you market to, sell, service and obtain feedback from a machine customer? What does “customer experience” even mean for a machine customer?
- **Trust** — Can the human customer trust the technology to accurately predict and execute? Conversely, can the machine customer trust the organization that offers the service? Do humans trust the organization that offers the service?

- **Fear** — Some humans may initially be uneasy about delegating purchasing functions to machines. And, organizations will have to consider what ethical standards, legal issues and risk mitigation are needed to operate in a world of machines as customers.
- **Other barriers** — Complex AI technologies, privacy, security and risk, fraud, regulatory compliance issues, taxation and data sharing.

User Recommendations

- Create scenarios to explore the market opportunities. Initiate collaboration with your chief digital officer, chief data officer, chief strategy officer, sales leaders and chief customer officers to explore the business potential of machines as your customers.
- Identify specific use cases where your products and services can be extended to machine customers. Pilot those ideas to understand the technologies, processes and skills required.
- Build your organization's capabilities around digital commerce and AI over the next five years. First in machine learning, then extending to other facets involved in machine customers processing information, making informed decisions and performing purchase transactions. Alternatively, join other platforms that already have these capabilities if you don't have the resources to build them yourself.
- Follow examples from organizations such as Amazon, Google, HP and Tesla, for evidence of capabilities and business model impact.

Sample Vendors

Amazon; AutoCrib; Google; HP; John Deere; Tesla

Gartner Recommended Reading

Why Machine Customers May Be Better Than Human Customers

The Programmable Economy Is Driving a New Growth Reality and Business Opportunities

Why Machine Customers May Be Your Service Departments' Best Advocates

CIOs Can Maximize Product Lifetime Value by Embracing Machine Customers

Infographic: A Day in Your Life in a World of Machine Customers

Differential Privacy

Analysis By: Bart Willemsen

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Definition:

Differential privacy is a system for using or sharing a dataset while withholding or distorting certain information elements about individual records in the dataset. The system uses exact mathematical algorithms that randomly insert noise into the data, add parameters for distinguishability, closeness and diversity of outcomes. As such, it ensures to not disclose identifiable information while also making sure that the resulting analysis of the data informationwise does not significantly change.

Why This Is Important

Concerns continue to exist about privacy and the use of personal information in algorithms to serve content or personalize recommendations. As regulatory measures are employed to prevent unauthorized use of information, businesses are looking for ways to protect personally identifiable information while still using the data. One technology that can be deployed to accomplish this is differential privacy.

Business Impact

Business data holds value and much of it is personal data. Regulations that constrain use of personal data are increasing, and the liability for misusing personal data can be substantial. Businesses need to ensure their reputation reflects a company that protects customer data. There are many techniques to address problems in preserving privacy when training AI models. Differential privacy ensures the privacy of individual rows of data while supporting meaningful analysis of aggregate data.

Drivers

- Businesses need to uncover value from data without crossing the boundaries of ethical or regulatory restrictions on the use of personal data.
- Differential privacy helps to not only reduce risk but also unlock data for AI that was previously too difficult to access.
- It is increasingly likely that more restrictive regulations will be enacted, such as the recent European Union regulations centered on the use of algorithms that use personally identifiable information.
- There is increasing risk from sophisticated, state-sponsored bad actors that target theft of personal information to facilitate fraudulent actions.
- Businesses' reputation and trust can be significantly damaged by information breach or misuse.
- Exposure is not limited to datasets in control of the business, as malicious actors can increasingly combine data sources to reidentify individuals even if the data used by the business is anonymized.
- With differential privacy, source data is not altered because the answer to each query is treated "on the fly."
- With differential privacy, information value is maintained in a controllable manner via a privacy budget, delivering the desired level of anonymity.

Obstacles

- Solutions that reference the use of technologies to protect privacy are not always comparable.
- Privacy protection solutions use a variety of techniques and they vary in effectiveness. Organizations frequently lack a framework that they can use to consistently determine the appropriate approach based on use-case requirements, technology maturity and fit.
- Most solutions cover the perspective of anonymity, focusing on the extent to which reidentification can occur. Other solutions add measures focused on diversity and closeness to add additional protections, apart from reidentification protection. This can cause confusion when considering solutions.
- Lack of familiarity with the technique and skilled staff to effectively deploy and manage it, hinders adoption and adequate protection.
- Lack of transparency around setting of the privacy budget (the extent to which controls are implemented) undermines trust, whereas increased transparency could elevate trust.

User Recommendations

- Explore the use of differential privacy techniques to decrease the likelihood of sensitive data exposure when risk is elevated.
- Use a privacy impact or data protection impact assessment to establish whether additional means are necessary and relevant to the use case.
- Compare differential privacy with other privacy-enhancing computation techniques when operating in high-performance environments that require a high level of precision in analytics models.
- Prioritize differential privacy techniques if you're operating in a highly regulated industry, such as financial services or healthcare.
- Explore differential privacy techniques when using data across regions where privacy regulations may vary, and always be transparent about where you've set the privacy budget.

Sample Vendors

Immuta; LeapYear; LiveRamp; PHEMI; Privitar

Gartner Recommended Reading

Top Strategic Technology Trends for 2022: Privacy-Enhancing Computation

Three Critical Use Cases for Privacy-Enhancing Computation Techniques

Predicts 2022: Privacy Risk Expands

At the Peak

Customer Psychographics

Analysis By: David Pidsley

Benefit Rating: Moderate

Market Penetration: 1% to 5% of target audience

Maturity: Adolescent

Definition:

Customer psychographics is the study and classification of users according to their attitudes, communication style or decision-making style, rather than their specific actions, requirements, profitability or satisfaction. Users are matched to predefined styles, or personality preferences, based on directly captured data (e.g., social media, user-generated images and video, audio calls) or on data derived from analysis of behaviors (e.g., purchasing products with a consistent set of attributes).

Why This Is Important

Differentiated user experiences rely on segmentation, including demographics, which explain who the buyer is, and psychographics, which explain why they buy. Automatic psychological profiling has only recently become feasible. Machine learning and behavioral sciences have increased its consistency and accuracy, which can outperform demographic or transactional segmentation. For example, Stanford's algorithms judge traits more accurately than colleagues using just 10 social media "likes."

Business Impact

Functions:

- Customer analytics: CRM strategy and customer experience design and execution
- Customer service: Support center quality assurance and employee performance
- Sales: Demand generation, acquisition, retention, enablement and execution
- Marketing: Market insight, content, messaging, go-to-market strategy
- Product: Planning, development, self-service automation and analytics
- HR management

- Audit: HR, cybersecurity risk

Industries:

- Media and advertising
- Retail
- Banking and insurance
- Healthcare
- Government

Drivers

- Whereas the Myers-Briggs Type Indicator personality profiling dates to Jung's research of the 1920s and has been criticized for poor validity, automated industry solutions have since adopted psychographic models with wider academic endorsement, such as the big five personality traits.
- Natural language processing-enabled emerging technologies, which are based on combinations of innovations such as computer vision, machine learning and deep neural networks, are enabling marketing organizations to hyperpersonalize their target marketing audiences and messaging.
- Superhuman capacities in voice-to-text transcription and natural language understanding have enabled service centers using this technique to reduce handling time — whether that be average handle time or average talk time. They also use it to increase first-contact resolution rates by routing the customer to a support agent with the best suited personality.
- Sales environments are using employee psychographics to align salespeople with customers or prospects, resulting in increased sales conversion rates.
- Human resources management teams are applying psychographics to recruiting, marketing for talent, conducting gender bias analysis and supporting culture change in digital transformation communications.

Obstacles

- Privacy and ethics challenges persist. Subjects of psychological profiling (even from public information) consider it intrusive, creepy or improper, especially as applied to recruitment and targeted advertisements to audiences or individuals with protected characteristics, such as minors.
- High-profile examples of bias and inaccuracy risk undermining confidence in the robustness of solutions or techniques, constrained by unrepresentative data sources.
- Customer psychographics' applicability to B2B relationships is less established, in that personality traits of individuals may not represent enterprise buying preferences.
- The business value of personalization is still debated, particularly in marketing, regarding how effective it is to vary the brand's voice for individuals, rather than for larger cohorts.
- Use cases and domains are diversifying. Diverging technologies and methodologies are creating disparate quality solutions.

User Recommendations

- Use psychographics to gain insight and empathy as to what motivates customer behavior in ways that allow organizations to build trust and loyalty, which is vital to relationships and better engagement.
- Apply psychographic segmentation when a customer's product or service requirements are not clear, but there is an opportunity to build trust through emotional engagement.
- Apply psychographic segmentation when the reason why someone acts is more relevant to the nature of the relationship than what that person actually does. For example, does the person buy an expensive watch as a social signal or because they view it as a prudent investment?
- Define your approach to customer psychographics based on context. Approaches will differ significantly depending on context. For example, communication style analysis may be helpful in a call center, while insight into attitudes to risk or convenience are relevant to product recommendations.

Sample Vendors

CaliberMind; Crystal; Dynamic Yield; HireVue; Intelligent Voice; MATTR; Neosperience; NICE; Receptiviti

Gartner Recommended Reading

Building a Neurocentric Organization Is the Next Gamechanger

Technology Opportunity Prism: Emotion AI Technologies

Implement Customer Experience Analytics to Uncover CX Opportunities for Your Products

How to Use Behavioral Economics to Drive Adoption and Save Money in Your Organization

Emerging Technologies and Trends Impact Radar: Customer Analytics for Customer Experience

Emotion AI

Analysis By: Annette Zimmermann

Benefit Rating: Transformational

Market Penetration: Less than 1% of target audience

Maturity: Emerging

Definition:

Emotion artificial intelligence (AI) technologies (also called affective computing) use AI techniques to analyze the emotional state of a user (via computer vision, audio/voice input, sensors and/or software logic). Emotion AI can initiate responses by performing specific, personalized actions to fit the mood of the customer.

Why This Is Important

Emotion AI is considered transformational as it turns human behavioral attributes into data that will have a large impact on human-machine interface (HMI). Machines will become more “humanized” as they can detect sentiments in many different contexts. Furthermore, applying deep learning to computer vision or audio-based systems to analyze emotions in real time has spawned new use cases for customer experience enhancements, employee wellness and many other areas.

Business Impact

Contact centers use voice analysis and natural language processing (NLP)-based algorithms to detect emotions in voice conversations, in personal chat conversations and chatbots. Computer vision (CV) based emotion AI has already been used for more than a decade in market research with neuromarketing platforms that test users' reactions toward products. In addition, we see the technology expanding to other verticals, such as medical research, healthcare (diagnostic) and retail (customer experience).

Drivers

The increasing number of use cases we have identified indicates an increase in commercialization as emotion AI finds applicability in new domains.

- One of the drivers for detecting emotions/states is the need for a system to act more sympathetically. For instance, it creates anthropomorphic qualities for personal assistant robots (PARs) and virtual beings, making them appear more "human." This "emotional capability" is an important element in enhancing the communication and interaction between users and a PAR. This can be an empathic avatar or an emotion-detection-enabled chatbot. A person's daily behavior, communication and decisions are based on emotions — our nonverbal responses in a one-to-one communication are an inseparable element from our dialogues and need to be considered in the human-machine interface (HMI) concept.
- Combinatorial technology solutions such as computer vision-based and audio analytics or language-based and computer vision enable customer experience enhancements.
- Strongest adoption is currently happening in the context of contact centers where voice-based emotion analysis supports multiple use cases such as real-time analysis on voice conversations, emotion detection in chat conversations, emotional chatbots and more.
- Market research and neuromarketing tools are continuously leveraging emotion detection in various user scenarios including focus groups and product testing. Vendors have been extending their offerings toward remote/online interviews during 2020 — due to the pandemic.
- In the creation of virtual beings in customer service or other consumer-facing scenarios, emotional responses are a critical element.
- As the metaverse unfolds, virtual beings will play an important role as business models evolve and the entire ecosystem of this new digital world emerges.

Obstacles

- Privacy concerns are the main obstacle to rapid adoption in the enterprise. This is especially a concern in real-live situations (vs. lab/research environments) for both consumer-facing (e.g., monitoring emotions in a retail environment via cameras) and employee-facing situations. Research environments like product testing have the advantage that the Emotion AI is used for this specific purpose and the user (product tester) is fully aware that their emotions are being captured to improve usability or other features.
- Bias: when using facial expression analysis, models are likely to be retrained in different geographies to get the system to detect the different nuances present due to different cultural backgrounds.
- Variation across modalities. Certain emotions can be better detected with one technology mode than with another. For instance, “irony” can be detected using voice-based analysis while this is close to impossible to detect with facial expression analysis.

User Recommendations

- Review vendors’ capabilities and reference cases carefully. As the market is currently very immature, most vendors are focused on two or three use cases in two or three industries. At the same time, identifying and processing human emotion is currently a gray area, especially in the EU. The EU Commission has started an initiative to review the ethical aspects of AI technologies, and emotion AI will certainly be part of this debate.
- Enhance your customer analytics and behavioral profiling by applying emotion AI technologies bringing your customer experience strategy to the next level.
- Be use-case-driven. The use case will determine the emotion AI technology to be used and vendor selection.
- Appoint responsibility for data privacy in your organization — a chief data privacy officer or equivalent.
- Work with your vendor on change management in order to avoid user backlash due to sensitive data being collected.

Sample Vendors

Behavioral Signals; Cogito; DAVI; Intelligent Voice; kama.ai; MorphCast; Soul Machines; Superceed; Symanto; Uniphore

Gartner Recommended Reading

Competitive Landscape: Emotion AI Technologies, Worldwide

Emerging Technologies: Emotion AI in the Workplace

Competitive Landscape: Customer Analytics

Tool: Vendor Identification for Natural Language Technologies

WEM Applications

Analysis By: Jim Davies

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Adolescent

Definition:

Workforce engagement management (WEM) applications expand on the already mature workforce optimization (WFO) market by accommodating complementary technologies — interaction assistance and voice of the employee (VoE) — that help drive employee engagement. The underpinning WFO component is the result of the unification of quality monitoring, workforce management, e-learning, performance management and speech analytics tools, which have helped drive operational performance over the past decade.

Why This Is Important

WEM brings a much needed additional dimension to the management of contact center employees:

- Employee needs and expectations are evolving rapidly. Incumbent management philosophies and technologies focused on operational performance enhancement fail to address these ambitions.

- The increase in gig and freelance workers is putting pressure on customer service departments to ensure a high perception of employee experience, without which securing their commitment will be increasingly challenging.

Business Impact

As societal shifts begin to force a change in how contact center managers handle their workforce, traditional operational management techniques will increasingly fail over the next few years. Incumbent WFO applications focus on delivering employee efficiency and effectiveness gains. The extension of this to WEM helps improve operational performance, and elevate employee well-being and engagement.

Drivers

- COVID-19 has accelerated the work-from-anywhere business model. The shift to hybrid contact centers (mix of WFH and physical contact center) has resulted in the need to refine onboarding, scheduling, evaluation and coaching capabilities, previously optimized for a contact center environment.
- As AI and automation continue to remove the more mundane interactions, agents will increasingly deal with the remaining more complex and often emotional interactions. This will necessitate the need for a positive working environment in order to attract the right caliber of employee.
- The ability for advisors to apply for jobs and work remotely, from outside the traditional office commuter zone, combined with ability to assess an employer through review sites such as Glassdoor, will place a greater emphasis on employee experience.
- Contact center as a service (CCaaS) and customer engagement center (CEC) vendors are turning to WEM as a must-have complementary function. However, many are still at least a year away from having a viable solution, complicating procurement of a WEM suite.
- Technologies that help drive engagement (and performance) through interaction assistance (such as those associated with next best action recommendations, unified desktops, and process guidance and automation) have become an essential dimension of WEM, beyond traditional agent management functions.
- Adoption of SaaS-based solutions has accelerated. These solutions account for the majority of new deployments.
- Mobile application support for agents has increased; however, adoption remains modest. Most solutions lack capabilities beyond the obvious WEM-focused ones, such as the ability to view schedules and make shift change requests.
- VoE is an important mechanism for understanding both the drivers and barriers to the agent experience that impact frontline engagement and performance. Some vendors have diverse offerings; however, many remain rudimentary in their capabilities.

Obstacles

- The lack of maturity within many CCaaS and CEC vendors, which is the preferred procurement route for the most sophisticated organizations.
- Many contact centers still prioritize operational performance over employee well-being, resulting in a WFO vs. WEM mindset to application procurement.
- COVID-19 has fundamentally changed the frontline environment, and possesses its own unique set of challenges to engagement and productivity (e.g., work-life balance, right fit for WFH, feelings of lack of support and networking, and perception that reps in the physical contact center are viewed by management as higher performers). As such, the software market needs additional time to further refine their applications according to the future likely status quo.

User Recommendations

- Determine the likely change to the expectations of future workforce in your specific industry and geography.
- Prove the correlation between how engaged an employee is and the experience they subsequently provide to customers through targeted metrics.
- Map out how to embrace a WEM strategy that leverages current WFO functions.
- Invest in appropriate desktop tools that complement CRM and assist the agent.
- Develop more agile ways to onboard and coach employees.
- Add a robust VoE program to the contact center operations.

Gartner Recommended Reading

Market Guide for Contact Center Workforce Engagement Management

Leading Engaged and Productive Work-From-Home Customer Service Teams

Customer Journey Analytics

Analysis By: Matt Wakeman

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Customer journey analytics (CJA) is the process of tracking and analyzing customers' and prospects' interactions with an organization across multiple channels. It covers all channels the customer has used, including: those with human interaction (such as a call center) and that are fully automated (a website); provide assisted help to the customer (live chat and co-browsing); operate in physical locations (a retail store); and have a limited two-way interaction (advertising).

Why This Is Important

Consumers expect personalized, customer-centric engagement and marketers need to deliver it — challenging marketing strategies that take a business-centric approach to the customer experience. Moreover, customer activity across channels is only increasing, so continued investment in understanding customer behavior within a single channel will increasingly fail to deliver valuable insights going forward.

Business Impact

CJA is a strategic priority for a variety of internal roles in several different industries, as marketing leaders strive to gain a better understanding of the customer journey across all phases — acquisition, retention, satisfaction, loyalty and advocacy. In many cases, marketers will be able to leverage CJA features in their existing martech stack rather than add a stand-alone vendor.

Drivers

- CJA is a strategic priority for a variety of internal roles in several different industries, as marketing, sales and service leaders strive to gain a better understanding of customer acquisition, retention, satisfaction, advocacy and loyalty.
- Complex challenges of delivering personalized experiences (in real-time and at scale) require marketers to measure each phase of a journey to optimize the journey based on the customer (or customer segment) context and intent.
- CJA access is accelerating as more applications begin to add elements of journey analysis into existing tools, such as customer data platforms, personalization engines, customer analytics applications and multichannel marketing hubs.

Obstacles

- Marketers are challenged by being able to access, analyze and activate all the customer data of their companies — from website activity to call-center engagement. Gartner surveys conducted in late 2020 show leveraging integrated customer data for insight and generation and enabling personalized customer data are among top challenges.
- Privacy regulations and consumer concerns about the privacy and security of their personal information require marketers to be transparent about customer data collection — a requirement that will impinge on their ability to power their CJA toolsets.
- Without prioritizing the right data capture and linkage for each channel, organizations will lack a true understanding of the customer journey beyond those interactions which require customers to self-identify.

User Recommendations

- Acknowledge that valuable insights come from understanding the combination of channels used by customers, not by understanding customer (or segment) behavior within a single channel.
- Avoid key performance indicators (KPIs) that fail to consider the implications of customer activities in other channels, such as single-channel conversion rates or ROAS.
- Start with customer identification and journey mapping across only two to three channels, where the journey benefits the customer and organization (high impact) and the data are both available and valuable (high feasibility).
- Evaluate your existing technology stack to see if you're already paying for an application with journey analysis capabilities — because journey analysis functionality is often embedded into other systems now.

Sample Vendors

Adobe; Cerebri AI; Splunk; Teradata

Gartner Recommended Reading

Market Guide for Customer Journey Analytics

Maturity Model for Managing Marketing Technology

Continuous Intelligence

Analysis By: Pieter den Hamer, W. Roy Schulte

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Continuous intelligence (CI) is a design pattern in which real-time analytics are integrated into business operations to process current and contextual data and prescribe actions in response to events. It provides decision automation or decision support. CI leverages multiple technologies such as augmented analytics, event stream processing, optimization, business rule management and machine learning.

Why This Is Important

CI plays a major role in digital business transformation and optimization projects. A key benefit is improved situational awareness and a common operating picture across business functions by providing real-time dashboards, alerts and next-best-action recommendations. Equally important is the capability to trigger automated responses by sending signals to machines or initiating business processes in cases where the decision on what to do can be automated.

Business Impact

The current hype is focused on holistic, integrated CI solutions that share real-time information from myriad sources with various departments and applications to support multiple business functions. This is a further evolution of many existing but more local CI point solutions for specific applications. Examples of more integral CI include real-time 360-degree views of customers, supply chain networks and “enterprise nervous systems” in airlines, railroads and other transportation operations.

Drivers

- **CI systems leverage real-time and contextual data to support, augment or automate decisions** for customer interaction, manufacturing, fraud detection, supply chain management or other areas. CI is also used for real-time (re)scheduling and optimization; for example, to allocate resources in the most efficient manner possible.
- **CI goes beyond real-time descriptive, diagnostic and predictive analytics by supplying prescriptive information about the best available action in the current context.** It applies to situations in which real-time data from the last few seconds or minutes significantly improves business decisions. It is not relevant where equally good decisions can be made with data that is hours, days, weeks or older.
- **The hardware and software technologies for holistic, integrated CI are available and affordable.** These include inexpensive sensors, publish-and-subscribe messaging systems, such as Apache Kafka, event stream processing platforms and augmented analytics. CI may also leverage decision management tools, machine learning, intelligent business process management suites (iBPMS), IoT platforms or other development, middleware and analytics products.
- **The growing complexity, and the desired scalability, speed and automation of decision making fuel the adoption of decision intelligence.** This discipline includes the explicit modeling of decisions as a foundation to understand, assess and, where needed, reengineer decisions. It also encompasses the combination of connected insights, contextual analytics and CI.
- With increasing dynamics and disruptions in business, companies need to be more adaptive and resilient. **CI enables constant monitoring for threats and opportunities, including suggested or automated responses to those events.** To further improve this, adaptive machine learning combined with CI paves the way for what ultimately may become autonomous, constantly adapting and self-learning processes and organizations.

Obstacles

- **CI can be very challenging in terms of the full integration of real-time analytics with business processes** and their supporting applications, which, as a result, need to be redesigned. This requires close collaboration between disciplines such as data and analytics, IT application teams and business process designers.
- **Holistic, integral CI is applied at a cross-functional enterprise or ecosystem level,** resulting in a more complete situational awareness and more optimal decisions. However, to achieve this, resistance to change and a silo-oriented culture need to be overcome.
- **Many companies lack the skills necessary to develop custom-built solutions for CI.** These skills include streaming data processing and time-series data analysis, which are significantly different from processing and analyzing data "at rest."
- **Real-time integration of multiple data sources leaves little room for dealing with semantic differences or data quality issues**, implying the need for mature data management practices.

User Recommendations

- **Involve and work with business managers and subject-matter experts** as early as possible in the requirements-gathering and implementation processes, because when CI is implemented, it fundamentally affects the design of business processes.
- **Choose CI offerings in multidisciplinary collaboration among business domain experts, change managers, architects and developers**. Subscribe to SaaS offerings or acquire packaged applications or devices that provide internal continuous intelligence as a point solution to reduce the effort of achieving CI. However, more integral, cross-functional CI will still entail custom design and integration with multiple applications.
- **Hire outside service providers or train your staff on the new disciplines** if your enterprise wants to build its own solutions and does not already have staff expertise in messaging, stream analytics, machine learning and decision management disciplines.

Sample Vendors

Datapred; IBM; Iguazio; Quantexa; Radicalbit; SAS; Swim; TIBCO Software; TransVoyant; Ublique

Gartner Recommended Reading

Innovation Insight for Continuous Intelligence

Innovation Insight for Decision Intelligence

How to Use Real-Time Analytics When Building an Enterprise Nervous System

Market Guide for Event Stream Processing

Product Analytics

Analysis By: Radu Miclaus, Aapo Markkanen, Adrian Lee

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Product analytics are tools that organizations use to drive and analyze digital product usage and performance. They help better understand and improve end-user experience and outcomes through in-app communication and engagement with users. These tools typically are used for multiple purposes including product onboarding and activation, guided customer journeys, usage tracking, self-service support, and new feature notifications and testing.

Why This Is Important

Tracking, understanding and influencing the user activity through the experience created is becoming vital to running an organization. The democratization capabilities in generic analytics tools are desired by users in the product analytics tools as well. While product analytics has been adopted heavily by B2C software companies, the new wave of adoption is now impacting B2B software companies.

Business Impact

End users responsible for digital products can improve adoption, CX, cost for support, retention and revenue by:

- Building the experience and continually iterating to improve it through measurement.

- Uncover the bottlenecks and friction points for users and solve them in the software experience. Take advantage of the full product analytics tools capabilities of in-app communication and guides supporting the full experience.
- Align the internal-focused metrics in engineering and UX with the CX metrics.

Drivers

- The potential for high growth, high margin software models focused on CX is a driver for digitizing much of the experience across all interaction points. This experience needs to be tracked, analyzed and optimized.
- The advances in cloud computing are pushing the growth in the SaaS market size, and product analytics implementation is simplified in SaaS software.
- The increase in SaaS solution availability is decreasing the cost of switching for users and organizations, and the speed to value is a driving factor. Product analytics is a must for acceleration to business outcomes.
- Users are expecting the tools used in the workplace to be delivered and experienced just like the tools and apps in the B2C space. Hence, there is an increase in investment for improving the B2B CX. To achieve this, measurement and analytics are crucial.

Obstacles

- While the vendors are making strides in democratizing and augmenting the experience for product analytics tools, the steep learning curves still persist for regular product operations teams or marketing business analysts to onboard and scale on the tools.
- The need to bring in and manage other data from other domains to augment the limiting view in the product usage data can be an additional effort that needs to be done outside the tools themselves.
- Complex B2B applications that require multistep workflows and multiple personas' involvement can present difficulties in interpreting product usage data in a meaningful or useful way to improve the experience and user outcomes.

User Recommendations

- Make tracking and monitoring instrumentation a first class tenet of any software application built for CX use cases.
- Evangelize the definition and reporting of the CX KPIs as a tool to align the organization around the customer-centric focus for a delightful CX.
- Build operations (product and/or marketing) teams that work with data engineers to build and augment the data and metadata structures needed for a holistic digital product analytics view.
- Build a feedback loop across the entire experience, where the data and analytics collected during onboarding, activation, usage and support will inform and prioritize the requirements for future capabilities designed to remove the friction points in the experience.
- Use off-the-shelf products for product analytics. The vendor landscape offers a robust set of capabilities to start and expand the product analytics processes.

Sample Vendors

Amplitude; Countly; FullStory; Gainsight; Heap; Mixpanel; Pendo; Pyze; Quantum Metric

Gartner Recommended Reading

Market Guide for Web, Product and Digital Experience Analytics

Competitive Landscape: Product Management Tools

Worlds Collide as Augmented Analytics Draws Analytics, BI and Data Science Together

Product Manager Insight: Changes in Product Data and Insights Through 2025

Sliding into the Trough

Digital Experience Analytics

Analysis By: Melissa Davis

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Digital experience analytics (DXA) are tools that provide diagnostic insights into visitor activity and customer experience on responsive web and mobile apps. The tools are enabled by advanced analytics and machine learning, session replay and heat map technology.

Why This Is Important

Digital experience analytics have evolved from server-based tools for analyzing web logs to both client-side and server-side logs. Data captured includes user inputs such as keystrokes, mouse movements, clicks in form fields, page scrolls and mobile gestures. Digital experience analytics tools often complement web and product analytics tools and provide diagnostic insights for improving the digital CX leveraging session replay tied to digital journeys in many cases.

Business Impact

Web analytics answer questions about what has happened, but do not address the why of the customer behavior. Digital experience analytics tools complement web analytics for customers including:

- Conversion rate improvement in sell, retention and upsell scenarios
- Faster identification and resolution of web and mobile technical issues
- Better customer service support delivery by agents
- Optimized campaigns in digital customer journeys by marketing teams
- Data to guide choices in product design

Drivers

- Increased importance of digital experiences due to the pandemic, which has required organizations to shift from physical to digital channels
- Companies that used to analyze their users through the lens of point-in-time sessions look now for more contextual capabilities in understanding user paths and behavioral segmentation
- Increased focus on continuous accounts rather than isolated sessions, as part of efforts to develop as-a-service business models and generally to create more enduring relationships with customers
- Improved ability to mine huge volumes of session data, uncover patterns and provide faster insights to business analysts about the causes of customer experience problems (previously done by IT and business analysts)
- Convergence between product analytics and digital experience analytics driven by increasing sophistication. Companies that may have traditionally used session replay and other diagnostic capabilities solely under engineering are looking for features that allow them to understand digital experiences in a more commercial or strategic context
- Incumbent DXA vendors repositioning themselves in broader terms than they used to are converging and overlapping with product analytics offerings — while being challenged by vendors from application performance management, another adjacent market

Obstacles

- The market is both consolidating and expanding into other categories including horizontal (product analytics) and vertical (back-end digital experience monitoring or front-end digital adoption platforms).
- Some vendors are expanding capabilities or shifting into adjacent markets, such as customer journey analytics or product analytics, that might present challenges in buyers' selection of vendors.
- Some vendors are expanding vertically from focusing on front-end customer experience to focusing on back-end IT monitoring.

- Usability and technical depth of digital experience analytics tools require careful balancing, as the addressable user base continues to expand from data scientists and analysts to less-technical users. Many of the available DXA tools still present a relatively steep learning curve for business users.
- Data privacy considerations restrict real-life application of digital experience analytics, despite anonymization and other privacy-enhancing features.

User Recommendations

- Evaluate digital experience analytics tools as a part of an overall digital analytics strategy for tracking, measuring and improving the customer experience across the digital customer journey, across devices and across interactions with brands.
- Use traditional web and mobile analytics with a digital experience analytics tool to diagnose visitors' struggles and optimize the customer experience.
- Embed the practice into different teams' workflows and ensure engagement over time to mitigate underutilization and ensure value realization.
- Conduct rigorous due diligence on digital experience analytics vendors' security and privacy terms and policies. Evaluate each webpage to determine which page is appropriate for session replay data capture, and provide ongoing reviews of the strength and accuracy of the redaction policies in place.

Sample Vendors

Acoustic; Contentsquare; Decibel; FullStory; Glassbox; LogRocket; Quantum Metric; SimplicityDX

Gartner Recommended Reading

Market Guide for Web, Product and Digital Experience Analytics

Emerging Technologies and Trends Impact Radar: Customer Analytics for Customer Experience

Quick Answer: How Product Managers in Leading TSPs Overcome the No. 1 Challenge of Building Compelling CX

Implement Customer Experience Analytics to Uncover CX Opportunities for Your Products

Graph Analytics for CX

Analysis By: Radu Miclaus

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Definition:

Graph analytics techniques allow users to visually represent and explore relationships between entities in a one-to-one, one-to-many and many-to-many manner. This network-based method is an alternative or complement to traditional tabular analysis used for descriptive and predictive analytics. It relies on entities or nodes (organizations, people, locations, transactions, devices) being represented in relationships or edges that connect the nodes, based on past or predictive interactions.

Why This Is Important

Graph analytics lends itself to CX as it is a multidimensional problem with many entities that interact nonlinearly, which makes it hard to track with tabular and key-based data representations and methods. Graph analytics are very important because they add a network dimension to the analysis of the customer profiles, their journeys and the other entities involved in those journeys. This helps optimize the experience along the product/services dimensions along with customer journey dimensions.

Business Impact

Graph analytics can identify paths and connections very quickly, hence their applications across CX span from customer profile clustering, recommendations, network concentration of desired actions (conversion, influence, share, likes, etc.) and undesired (risk, fraud, money laundering, etc.). Since the world (consumers and workers) is becoming interconnected in social networks, the influencer-focused marketing will increase as a focus for marketers.

Drivers

- The e-commerce platforms are expanding their target audiences which produces an explosion in the dimensionality of the product and services catalogs they offer as well as the dimensionality of the target customer base.
- Devices and mobile applications are becoming the norm not just as an extension of the websites, but the preferred medium of interaction with brands. These interaction channels track not only the interaction between consumers and the brands but their peers as well. This lends itself for the need of graph analytics.
- In order to create more personalized and holistic experiences, brands and app providers need to understand the context of the actions they want to model in their audience. Graph analytics is a technology well-positioned for offering that context through connections and guiding the decisions to improve the experience.
- Industries when we are seeing graph analytics for CX heavily adopted are e-commerce, media and content, gaming, financial services, life sciences, and healthcare.

Obstacles

- Graph in general is a newer methodology and there is a shortage of professionals that can build graph analytics and a shortage in the audience that can consume graph analytics output/exploration.
- Data acquisition and stitching for providing holistic context of connections between entities related to CX is still a high-friction process for organizations.
- The process of building and refining graphs and in particular knowledge graphs used for CX applications is still relatively manual and requires substantial domain knowledge, which adds to the cost of scaling and maintaining graph analytics content.
- Security, privacy and level of openness for data sharing (through APIs) between the fragmented CX technology vendor market presents a challenge for brands to achieve holistic and adaptive contexts of the CX.

User Recommendations

Data and analytics leaders responsible for CX should:

- Prioritize use case identification and acceleration and iterations through minimum viable products (MVPs) for graph analytics, while also documenting their journeys to do so for knowledge transfer in other areas of the organization.
- Explore both commercial and open source options for graph analytics in order to prove the value and secure investment in people, processes and technology for graph analytics applications.
- Do not ignore the graph capabilities already available in CX applications.
- In a heavily fragmented data and technology space, D&A leaders should build robust processes around metadata management and tracking, which can lend themselves to graph analytics due to the multidimensionality nature of the metadata environments.
- Start with the systems that already have organized and structured data (CRM, CSS, Digital Analytics tools) interconnect the data and metadata through graph analytics and then move to other data sources.

Sample Vendors

Adobe; Cambridge Semantics; Digital Reasoning; Microsoft; Neo4j; Salesforce; SAS; TigerGraph; Quantexa; TIBCO Software

Gartner Recommended Reading

Forecast Analysis: Artificial Intelligence Software, Worldwide

Top Trends in Data and Analytics for 2021: Graph Relates Everything

Graph Steps Onto the Main Stage of Data and Analytics: A Gartner Trend Insight Report

Understanding When Graph Analytics Are Best for Your Business Use Case

Case Study: Data and Analytics Monetization With Knowledge Graphs and AI (Turku City Data)

Augmented Analytics for CX

Analysis By: Melissa Davis, David Pidsley

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Augmented analytics for CX use low-code/no-code tools that leverage machine learning to automate analytics workflows. They include technologies that automatically discover, visualize, narrate findings from datasets, without requiring people to perform analysis, build data visualizations, create data models or write algorithms. Insights are typically delivered as data stories complemented by NLG descriptions, for less technical users to easily interpret CX-related data.

Why This Is Important

Augmented analytics use ML to transform how analytics content is developed, consumed and shared. It is a key feature of conversational agents that enables customer-facing employees and CX teams to generate queries, explore data and receive/act on insights in natural language. It automates the process of finding audiences by sifting through large amounts of customer/open data to reveal audience segments for marketing objectives. It can also help surface crucial CX data around customer sentiment.

Business Impact

Contextual, continuous and connected data and analytics are required to respond to more complex and uncertain business decisions. The augmented analytics market is evolving to deliver insights directly to a decision maker, who would traditionally be thought of as a data "consumer"; this is now known as the "augmented consumer" (see Top Trends in Data and Analytics for 2021: The Rise of the Augmented Consumer).

Drivers

- Augmentation of analytics workflows is advancing rapidly along the Hype Cycle to mainstream adoption as a key enabler of faster data preparation, improving the adoption of modern analytics and BI platforms, and multipersona and citizen data science platform usability.
- Automated insights are embedded in enterprise applications such as sales, marketing and customer service actions to optimize decisions and behaviors of employees within their context, not just those of business analysts and expert data scientists.

Augmented analytics' adoption is driven by the following capabilities:

- Employees have timely visibility of CX health status to ensure the organization can understand the corporatewide CX strategy, status and outcomes.
- Users can more easily predict when customer sentiments are moving into the negative to mitigate any further erosion.
- Customer-facing employees can obtain an easily digestible summary or data story of the current CX status of the customer they may be speaking to now or will be speaking to in the future.
- Automated insights reduce potential bias where people only find and explore data fitting with their preconceived ideas about customers.
- The improved composability of augmented analytics solutions in a headless form enables easier integration to bring insights into actions in the business process.

Obstacles

- Failing to carry out a full assessment of augmented analytics capabilities for explainability — without due focus on how insights are automatically derived — risks users displaying too much or too little trust in their outputs.
- The investment in data literacy lags behind technology, presenting data and analytics leaders a significant risk in the lack of adoption and impact of new augmented analytics tools.
- Technology that is easy to use does not necessarily mean it can be usefully applied within the context of a specific business process by a non-expert. Knowledge is still required of the various techniques and methods to apply them appropriately. This is especially true for deploying data science and machine learning techniques within a business process.
- As many startup augmented analytics vendors emerge in this space, organizations are continuously challenged to support these tools by managing a knowledge graph-enabled semantic on the corporate level.

User Recommendations

- Include augmented analytics as part of a digital strategy to deliver automated insights to a broader range of users — including customer-facing business users in sales, marketing and customer service — without expanding the use of scarce data science resources.
- Use automated insights to complement existing visual self-service analytics and BI tools, including CRM analytics and customer-facing technologies, where algorithms and predictive models can detect patterns in customer data and identify patterns and insights a human may not see.
- Invest in data literacy. Augmented analytics requires the same, if not more, emphasis on data literacy training and enablement programs, especially around predictive analytics and data storytelling, to derive the most value from the solutions.

Sample Vendors

NOW Affinio; Aible; Anodot; Concured; Course5; Salesforce; Sisense; Sisu Data; Unscrambl

Gartner Recommended Reading

Market Guide for Augmented Analytics

Maximize the Benefits of Augmented Analytics With a Strategic Action Plan

Data Storytelling: Analytics Beyond Data Visualizations and Slideshows

Maximize the Value of Your Data Science Efforts by Empowering Citizen Data Scientists

Cool Vendors in Analytics and Data Science

Digital Ethics

Analysis By: Pieter den Hamer, Svetlana Sicular, Frank Buytendijk, Bart Willemsen

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Definition:

Digital ethics comprises the systems of values and moral principles for the conduct of electronic interactions among people, organizations and things.

Why This Is Important

Digital ethics, especially regarding privacy and bias, remains a concern to many. The voice of society is getting louder, and the responsible use of AI is rapidly coming into focus for individuals, organizations and governments. People, increasingly aware that their information is valuable, are frustrated by lack of transparency, misuse and breaches. Organizations are acting to mitigate risks around managing and securing personal data, while governments are implementing stricter legislation.

Business Impact

Digital ethics strengthens the organization's positive influence and reputation among customers, employees, partners and society. Areas of business impact include innovation, product development, customer engagement, corporate strategy and go-to-market. Intention is key. If ethics is simply a way to achieve business performance, it comes across as disingenuous. The goal to be an ethical company serves all parties and society more broadly and leads to better business trust and performance.

Drivers

- Despite much hype, many organizations are still ignoring digital ethics, because they think it doesn't apply to their industry or domain.
- Board members and other executives are sharing concerns about the unintended consequences of innovative technology use.
- The media is increasingly featuring high-profile stories about the impact of data and technology on business and society at large.
- With the emergence of artificial intelligence, the ethical discussion is now taking place both before and during a technology's widespread implementation. AI ethics and other responsible AI steps attempt to reverse the negative popular sentiment around AI and establish more responsible use of its powers.
- Government commissions and industry consortia are actively developing guidelines for ethical use of AI. Examples include the EU's Artificial Intelligence Regulation, the Netherlands' Fundamental Rights and Algorithm Impact Assessment (FRAIA), and the U.S.'s National AI Research Resource (NAIRR), including the advancement of trustworthy AI in the U.S.
- Over the past year, a growing number of organizations declared their AI ethics principles, frameworks and guidelines. They have a long way to go from declaration to execution, although some organizations already have digital ethics practices.
- Gartner predicts that, by 2024, 30% of major organizations will use a new "voice of society" metric to act on societal issues and assess the impact on their business performance. The voice of society will put more pressure on both governments and public/private organizations to use technology ethically. "Big tech" is already a negative stereotype in societal jargon.
- More universities across the globe are adding digital ethics courses and launching programs to address ethical, policy and legal challenges posed by new technologies.
- Digital ethics is expanding to address concerns about rising energy consumption. In the case of nonrenewable energy, it is focusing on the carbon footprint of digital technology (particularly, machine learning and blockchain).

Obstacles

- Because of the ambiguous nature of digital ethics, organizations are struggling to operationalize it and expending significant effort to implement best practices.
- Organizations see digital ethics as a moving target due to confusion around society's expectations. An organization's position and beliefs may even steer digital ethics against the majority's opinion.
- Digital ethics is too often reactive, narrowly interpreted as compliance, confined to the technical support of privacy protection and/or viewed as explainable AI only.
- AI ethics is currently the main focus of overall digital ethics. Supporting technology needs to mature further.
- Opinions differ across people, regions and cultures on what constitutes "good" and "bad." Even in organizations where ethics is recognized as an important issue, consensus between internal and external stakeholders (such as customers) remains sometimes difficult to achieve.

User Recommendations

- Identify specific digital ethics issues and opportunities to turn awareness into action.
- Discuss ethical dilemmas from diverse points of moral reasoning. Ensure that the ethical consequences have been accounted for and that you are comfortable defending the use of that technology, including unintended negative outcomes.
- Elevate the conversation by focusing on digital ethics as a source of societal and business value, rather than simply focusing on compliance and risk. Link digital ethics to concrete business performance metrics.
- Ensure that digital ethics is leading and not following digital transformation. Address digital ethics early "by design" to create methods that resolve ethical dilemmas quickly.
- Organize training in ethics, and run workshops to create awareness within all AI initiatives about the importance of an ethical mindset and clear accountability in AI design and implementation.

Gartner Recommended Reading

Tool: Assess How You Are Doing With Your Digital Ethics

Tool: How to Build a Digital Ethics Curriculum

AI Ethics: Use 5 Common Guidelines as Your Starting Point

Every Executive Leader Should Challenge Their Teams on Digital Ethics

Expert Insight Video: What Is Responsible AI and Why You Should Care About It?

Customer Service Analytics

Analysis By: Steve Blood, David Norrie

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Customer service analytics is the combination of interaction analytics (desktop, speech and text), customer journey analytics and next-best-action analytics. Collectively, they surface real-time and historical insight into performance, and offer recommendations to elevate the customer experience and deliver against operational goals.

Why This Is Important

Deep analysis of customer and operational data enables customer service organizations to be more agile and effective, uncover hidden trends and insights to improve customer experience, improve operational efficiencies, allow insight into interaction dynamics, and increase revenue and/or savings. Analysis can operate on large stored datasets, or on real-time information flows.

Business Impact

Analyzing customer interactions and journeys gives organizations deeper insights into:

- Customer experience of interactions through multiple channels, validation of journey mapping and customer sentiment indications
- Employee experience in terms of quality of engagements, employee skills and next-best-action guidance

- Operational performance improvements in terms of opportunities for automation, deflection and process improvement

Drivers

- "Making better use of analytics and AI" is the top-third priority in Gartner's 2022 Customer Service and Support Priorities poll (see: Top Priorities for Customer Service and Support Leaders in 2022). The customer service environment has an overwhelming quantity of unstructured data — a combination of telephone recordings, emails and digital messages, all of which can be analyzed to drive deeper insights into customer experience, employee experience and operational performance.

- Migrating customer contact from assisted service to self-service continues to be an important focus for organizations in 2022. Analysis of current customer engagements in assisted service channels of voice, email and chat is a key initiative to achieving a successful self-service project.

- Taking advantage of the opportunity to recruit talent from outside the service center commuter belt and offering flexible working to existing advisers places new demands on onboarding, training and agent guidance. These learning initiatives can be bolstered by customer analytics capabilities — surfacing insights in near real time — to provide customer service managers with greater visibility of performance in the virtual working environment.

Obstacles

- The market for customer analytics is populated by best-of-breed providers focused on offering narrow but effective use cases for operational leaders.

- Customer service analytics decisions are mostly made in isolation of a larger data analytics strategy; hence organizations fail to see the true value of their analysis and investments remain fragmented.

- Organizations do not invest sufficient ongoing resources and effort to manage analysis sources (products, vocabularies); hence the usefulness of insights degrades over time.

User Recommendations

- Articulate the use cases relevant to your analytics project clearly.
- Calculate the potential added value of an integrated analytical technology suite above and beyond siloed technologies, such as speech analytics or performance management.
- Pay particular attention to the technical architecture and ensure alignment with the organization's overall customer analytics strategy.
- Broaden the value proposition by identifying lines of business (LOBs) outside of customer service and support, such as sales, marketing, operations and HR, which can also benefit from insights from mining customer conversations.

Sample Vendors

Amazon Web Services (AWS); Calabrio; CallMiner; Cogito; Genesys; Medallia; NICE; Qualtrics (Clarabridge); Verint

Gartner Recommended Reading

Competitive Landscape: Customer Analytics

How to Drive Value From Customer Experience Analytics

Use Analytics to Improve Customer Service Experience and Productivity

Accelerate Identification of Actionable VoC Insights With Speech Analytics

Personification

Analysis By: Andrew Frank

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Definition:

Personification allows marketers to deliver targeted digital experiences to individuals based on their inferred membership in a characteristic customer segment without collection or transmission of personal data.

Why This Is Important

Facing the deprecation of cookies and tracking in general, marketers, publishers and tech providers seek alternatives to preserve efficiency and accountability. Personification schemes aim to achieve this by establishing audience segments as units of targeting and measurement while hiding user-level data in ways that protect individual privacy. Successful personification techniques could resolve long-standing tensions between privacy and relevance in advertising and marketing.

Business Impact

Privacy barriers will impact hundreds of billions in digital ad spend worldwide. Mounting restrictions concentrate market power in digital infrastructure and consumer services platforms. Google, Meta, Amazon and Apple collectively control a dominant share of user data and media. Personification techniques restore balance and competition among publishers and tech providers, leading to a healthier media economy and greater choice, control and accountability for marketers.

Drivers

- The expansion of privacy laws and platform restrictions is creating a crisis of confidence among marketers in their ability to measure and optimize outbound communications.
- Cookie alternatives such as Google's Topics API, The Trade Desk's UID 2.0 and pure contextual approaches have yet to prove effective at scale.
- Technical advances such as ML-based segmentation, clean-room data collaboration and privacy-enhancing computation hold promise for personification improvements.
- Businesses with extensive first-party data such as retail, banking and telecommunications are under pressure to find ways to monetize their data without running afoul of privacy regulations or consumer expectations.
- Privacy regulators would like to rein in big tech providers without causing economic damage.
- Platforms and tech providers are actively pursuing personification solutions they hope will take pressure off their martech and advertising businesses and improve their privacy reputations.

Obstacles

- The technical challenges of personification are significant. As Google's FLoC illustrated, any passive inference about a subject's segment membership may expose surfaces that compromise privacy, resulting in a search for "good-enough" solutions. There's no consensus on how much protection or precision is "good enough."
- Beyond trade-offs, many privacy advocates disapprove of any marketing system that leverages behavioral data. Concerns go beyond exposure of personal data to include bias and exploitation.
- Transparency and control are hard to reconcile with personification techniques. Opaque machine learning algorithms create challenges for laws and policies requiring user profiling to be explainable.
- Alternatives to personification, such as contextual targeting and consent-based UID approaches, have also gained a following. More far-reaching concepts, such as decentralized ledger-based identity schemes, may make current approaches to personification obsolete before they reach maturity.

User Recommendations

- Focus data and analytic resources on customer segmentation strategies using experimental design and machine learning to refine persona definitions emphasizing consented, nonpersonal and synthetic data.
- Study or appoint someone to study, report on and possibly engage with Google's Privacy Sandbox and similar privacy-preserving persona targeting initiatives.
- Reevaluate personalization strategies and designs to minimize personal data requirements while maximizing opportunities for needs discovery, contextual relevance and user-controlled data sharing options.
- Migrate segment recognition and decisioning algorithms into edge-based applications and ad units where their inferences can remain private and reported anonymously.
- Make certain that personified segments are free of personal data and can't be combined with other data to identify (or reidentify) an individual.

Sample Vendors

Adobe; Analytic Partners; Epsilon; Google; LiveRamp; Neustar

Gartner Recommended Reading

3 Scenarios for Privacy's Impact on Targeted Advertising

Emerging Technologies and Trends Impact Radar: Customer Analytics for Customer Experience

Practical Privacy — Successfully Transition to Privacy-Preserving Marketing and Adtech

Emerging Technologies: When and How to Use Synthetic Data

VoC Applications

Analysis By: Jim Davies

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Voice-of-the-customer (VoC) applications combine multiple, traditionally siloed technologies associated with the capture and analysis of direct, indirect and inferred customer feedback. For example, survey, social media monitoring, and speech/customer journey analytics are integrated to provide a holistic view of the customer's voice. The resultant customer insights can be acted on automatically or disseminated to relevant employees and managed as part of inner and outer loop interventions.

Why This Is Important

Most organizations have multiple siloed customer feedback mechanisms at a departmental level, usually based on surveying complemented by other domain-specific information sources. Few organizations have aligned these various sources to create an integrated VoC solution and, as such, are failing to fully realize the potential positive impact that feedback can have on improving the customer experience.

Business Impact

A centralized VoC solution will:

- Instill more confidence in actions taken at both individual customer level (such as a retention call) and at overarching strategic level (such as a process or product change).
- Ensure that the right insight and action gets assigned to the right employee across the enterprise at the right time, regardless of where the feedback originated from.
- Help manage brand perceptions, understand and improve the customer experience and develop future customer engagement strategies.

Drivers

Several factors are accelerating the adoption and maturity of VoC, including the following:

- The emergence of large, big-name VoC vendors with revenue approaching $1 billion causing increased visibility and awareness of VoC applications.
- Adoption by B2B and B2B2C enterprises, not just B2C.
- Entrance into the market by mainstream CRM vendors such as Salesforce and Microsoft.

- Elevated commitment to the customer experience as the primary means of market differentiation by corporate executives.
- Uncertainty caused by changes to business models as a result of the COVID-19 pandemic, fueling the need for better customer understanding.
- Alignment with complementary employee experience initiatives currently fashionable with HCM leaders.
- Elevated focus on value measurement of VoC.
- Better alignment of VoC with research (user and product).
- Advancements in both prescriptive (i.e., a recommended list of prioritized actions per employee) and automated (i.e., resolving the action from within the VoC solution and associated operational integrations without human intervention) actions.
- Customer wants/needs, which are changing much faster (due to several factors) than in the past. Organizations need to be more responsive to these changing needs, and require a robust VoC application.

Obstacles

VoC is far from mainstream. Organizational maturity is low and the vendor landscape is still emerging, resulting in various obstacles:

- There are over 30 vendors that have expertise spanning the diversity of feedback techniques that a holistic VoC solution encompasses. New CRM vendor entrants with currently immature but potentially long-term viable offerings further complete procurement.
- Organizations will likely continue to collect feedback through multiple applications for many more years because individual departments will be reluctant to relinquish their tools and standardize on one central application. At best, an integrated multivendor ecosystem will be achieved.
- As the number of data sources ingested continues to expand, how VoC aligns with existing single-view-of-the-customer initiatives (for example, a customer data platform/lake) is an increasingly contentious discussion topic. The upside of time to value proposed to business by VoC vendors is countered by the cost, complexity and inherent duplication perceived by IT.

User Recommendations

Ideally, VoC should fall under the remit of a central customer experience function, but if not, then a cross-department VoC committee. Once set up, do the following:

- Conduct an internal audit to assess current customer feedback capabilities and reduce duplicate technologies.
- Prioritize future initiatives that collect VoC data by balancing quality (insightfulness) with the quantity of feedback available. Strive to obtain a single, holistic view of the VoC.
- Determine the most appropriate data architecture and analytical models/techniques to extract key customer insights at both individual respondents and aggregated across the customer base levels.
- Distribute relevant insights/actions across the organization (front line and management) in a timely manner using workflow and operational integration.
- Leverage VoC in core business processes, ideally in real time — for example, using a low survey score to open a customer service case within the customer service and support application.

Sample Vendors

Alida; Forsta; InMoment; Medallia; Qualtrics; SMG

Gartner Recommended Reading

Magic Quadrant for Voice of the Customer

Three Key Decisions to Prevent Your Voice of the Customer Strategy From Falling Into Disarray

How to Operationalize Your Voice-of-the-Customer Program

Privacy by Design

Analysis By: Bart Willemsen, Bernard Woo

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Privacy by design (PbD) is a set of privacy principles that underpin many modern privacy regulatory requirements. PbD is about proactively creating a culture of privacy, by embedding it often and early in technology (e.g., application or customer interaction design), as well as into procedures and processes (e.g., through privacy impact assessments). No finite principle list exists, yet PbD as best practice is globally applicable to the basis of any privacy program.

Why This Is Important

Privacy is one of the core tenants for organizations seeking to earn trust with their customers and drive increased revenue opportunities. In addition, the number of new or significantly revamped regulations continues to increase. Organizations can expect to gain efficiencies in operations by adopting PbD and embedding privacy considerations throughout their processing activities.

Business Impact

Privacy must be built in, as a proactive risk averse approach helps enhance consumer trust, prevent violations (such as costly data breaches) before they occur and reduce the damage from them if they do (such as fines or brand damage). All technology design must account for protection of any personal data at the core to mitigate privacy risk, which is at unprecedented heights with current data volumes processed.

Drivers

- Systems should be designed so that the collection of privacy-sensitive data is transparent to the data subject. Some technology-focused ideas for implementing PbD are: reduction in amounts of personal data and retention (data minimization), working on the original data (rather than copies) and applying pseudonymization where possible, alongside adequate authorization and access controls.
- The need persists to continuously evaluate the risks of reidentification and traceability, and include data location in their considerations for clarity on regulatory impact. Moreover, implementing PbD can lead to other positive changes, such as designating a privacy officer with reach, procurement activities for new IT services or frequently conducting privacy impact assessments.
- PbD and one of its subcomponents, privacy engineering, enable an approach to business process and technology architecture that combines various methodologies in design, deployment and governance. Properly implemented, it yields an end result with easily accessible functionality to fulfill the Organisation for Economic Co-operation and Development's (OECD's) privacy principles. It also helps mitigate the impact of a breach of personal data by reimagining defense in depth from a privacy-centric vantage point.
- The process involves ongoing recalculation and rebalancing of the risk to the individual data owner while preserving optimum utility for personal data processing use cases. As a result, organizations can rely on the right data being available at the right time with maximized information retention and trust in a compliant operation. They will also find benefit in data footprint and accompanying breach exposure risk reduction, consistent delivery to subjects upon a privacy promise and the collateral enhanced customer trust and engagement levels.

Obstacles

- Adoption and widespread recognition of PbD has been hampered by a lack of industry-recognized principles and regulatory support. The IPC of Ontario did describe seven key elements: proactivity, privacy by default, privacy embedded into design, full functionality, end-to-end security, visibility and transparency, and user centricity. In the U.S., a report by the Federal Trade Commission (FTC) of 2012 is the most visible early support for the PbD principle, yet worldwide standards evolution has not progressed much.
- Various legislative requirements only recently start to include "data protection by design and/or by default," implying a PbD approach to all activities. Precedent shaping rulings are slowly increasing in number and depth. Vendors have added statements like "product X was designed with PbD in mind," sometimes with little reference material to support the claim. Only as privacy becomes a more organic part of the development process, the need for PbD increases, as does the benefit rating.

User Recommendations

- Tackle privacy by design in manageable steps; a wholesale shift will be too much to handle. Privacy by design is a cultural change about the processing of personal data. This pertains both to existing operations and to innovations.
- Adjust the existing operations through business process reengineering. Especially in innovative developments and new processes, the change begins by asking questions such as: Can we achieve the purpose set out by using less personal data? Can we end the personal data life cycle sooner? Can we provide the same functionality or customer experience without using the identifiable data? Does the customer understand what we are processing about them and why? Can we adequately protect what we process?
- Identify use cases where privacy-enhancing computation (PEC) techniques can be adopted to support the embedding of privacy into current and future operational activities.

Gartner Recommended Reading

Use a Privacy Impact Assessment to Ensure Baseline Privacy Criteria

Quick Answer: What Privacy Concerns Must Executives Prioritize With Regards to Cyber-Physical Systems?

16 Frequently Asked Questions on Organizations' Data Protection Programs

5 Privacy Imperatives for Executive Leaders

Customer Data Platform

Analysis By: Joseph Enever

Benefit Rating: Moderate

Market Penetration: 20% to 50% of target audience

Maturity: Adolescent

Definition:

A customer data platform (CDP) is a software application that supports marketing and customer experience use cases by unifying a company's customer data from marketing and other channels. CDPs optimize the timing and targeting of messages, offers and customer engagement activities, and enable the analysis of individual-level customer behavior over time.

Why This Is Important

Making use of customer data is hard — doing it right results in improved customer experiences, marketing performance, scale and efficiency. But doing it wrong has a high cost — 40% of respondents in Gartner's 2022 Personalization Survey report that they would stop doing business with a brand that communicates to them in a way they find irrelevant or annoying. As multichannel marketing maturity, data privacy and first-party data strategies complicate the picture, marketers turn to customer data platforms to gain control.

Business Impact

CDPs address marketing use cases like segmentation, profile unification and predictive modeling. As customer data is seen as an enterprise data asset, use cases have grown into other functions like customer experience and enterprise data and analytics. CDPs originally served the retail, travel and hospitality industries (those with a lot of first-party customer data). But interest from B2B organizations has grown while features specific to B2B marketing leaders (e.g., proprietary data sources and predictive lead scoring) remain nascent.

Drivers

- CDPs appeal to many industries and business models. More roles within marketing, and adjacent functions, need unified, real-time data to operate efficiently and deliver strategic value. Because CDPs developed as a "hub," routing data through the martech stack, they have enabled marketers to coordinate a growing number of data-driven use cases, from identity resolution to messaging. CDPs' utility has made them a strategic purchase for many brands, anchoring initiatives from 360 customer views to journey orchestration.

- The past two years have seen continued acquisitions and diversifications, signaling a changing market theoretically moving toward settlement and further consolidation. Yet the growing use cases, interest from ad tech and further investment from marketing clouds suggest further diversification. Gartner predicts that by 2023, 70% of independent CDP vendors will be acquired by larger marketing technology vendors, or will diversify through M&A to enter adjacent categories such as personalization, multichannel marketing, consent management and/or MDM for customer data.

- Demand for CDPs has helped vendors congregate around groups like "marketing data integration," "smart hubs" and "marketing cloud." Overlapping features exist among these groups, and use cases vary. For example, marketing data integration CDPs focus on data management and integration, while smart hub CDPs encompass more end-to-end marketing workflows (including marketing orchestration, and marketing analytics). Marketing cloud CDPs focus on profile management and data governance, acting as a central axis to synchronize customer data across marketing, sales and service clouds. This variance shows why prospective buyers find it difficult to differentiate among vendor offerings.

- Hype related to first-party data strategies has been fueling interest in CDPs, as organizations face the reality of impacts from ID deprecation and data privacy regulations. Organizations then place their expectations for how that data will be leveraged to create value back to the CDP, which in many cases is only one piece of the necessary martech puzzle.

Obstacles

- Selecting and buying a CDP is complex. Prospective buyers' lack of detailed use cases, vision for marketing maturity, and clarity on incumbent technology dependencies exacerbate the challenge. Use cases positioned by CDP vendors can be far-reaching, such as compensating for the loss of third-party cookies and IDs, through identity resolution, data clean rooms and third-party data.
- CDP capabilities remain variable due to the expanding scope of features, and overlap with the broader technology landscape. For example, it is hard to differentiate between what a dedicated smart hub CDP delivers vs. an MMH that offers CDP features. There's confusion around the capabilities of CDP vs. MDM. Additionally, other technologies such as personalization engines offer CDP capabilities.
- CDP vendors need to differentiate their vision and proposition to stretch beyond feature and capability descriptions, and articulate how their product will deliver value in addressing complex client scenarios. Also, due to the variety of specialisms in the market, vendors need to strengthen their differentiation in the overlapping features of adjacent categories.

User Recommendations

- Identify appropriate use cases. Collaborate with stakeholders to develop use cases for unified customer data in the context of your marketing, sales, service and digital commerce outcomes. Identify points of friction and opportunities in first-party data collection, customer data analytics, marketing personalization and customer experience.
- Clarify points of integration and potential redundancy in your technology stack. Audit your incumbent technology landscape to identify dependencies and adjacencies where capabilities overlap (e.g., personalization engines and multichannel marketing hubs).
- Use proof-of-concept pilots to validate delivery on promised capabilities, as well as the usability and effectiveness of the offering.
- Scrutinize your existing multichannel marketing hub and personalization vendors' roadmaps to see if any existing features achieve the capabilities of a CDP, or if they plan to introduce such features.
- Work across business and IT functions in selecting and deploying a new CDP, or maximizing the use of existing technology.

Sample Vendors

ActionIQ; Adobe; BlueConic; Redpoint Global; Salesforce; Tealium; Zeotap

Gartner Recommended Reading

Market Guide for Customer Data Platforms

Maverick* Research: Pursuing a 360-Degree View of the Customer Will Destroy Your Business

A Guide to What Is — and Isn't — a Customer Data Platform

Marketing Analytics Teams Face Hurdles in Customer Data Management

Use Customer-Directed Engagement Models to Earn First-Party Data for More Effective Personalization

Personalization Engines

Analysis By: Jason McNellis

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Personalization engines apply data and context on individual users to select, tailor and deliver recommendations and messaging such as content, offers and other interactions primarily through digital channels. Personalization engines are most commonly used to improve conversion, average order value, campaign performance or revenue in support of three use cases: marketing, digital commerce and customer experience.

Why This Is Important

As brands increasingly rely on digital interactions, the importance of personalization has surged. Yet 63% of digital marketers say that delivering personalized customer experiences is a challenge. But achieving greater personalization productivity and desired results hinges on having:

- A personalization strategy, use case objectives and a prioritized roadmap of projects and tests
- Trained teams using the tool for segmentation, testing content and adapting message delivery

Business Impact

Personalization engines improve outcomes for marketing, digital commerce, merchandising and customer experience efforts. They offer the ability to accelerate: segmentation, experience testing, finding and recommending products and content, message targeting and real-time triggering across channels and use cases.

Drivers

Thirty-two percent of digital marketing leaders say that “creating and delivering personalized experiences for customers” is among their top three digital marketing objectives for 2021. In addition, 84% say they use artificial intelligence (AI) to “enhance their marketing function’s ability to deliver real-time, personalized experiences.” Personalization engines make both easier by:

- Accelerating ROI through industry specificity. More vendors are offering industry-specific templates, AI models and reporting to help accelerate time to value and increase ease of use for marketers, thereby lifting ROI.
- Improving data ingestion beyond customer behavioral data to support more diverse use cases. Data sources include customer context (location, local weather), brand context (inventory level, presence of local store) and predicted affinities. These data sources will grow in importance as they can facilitate personalization even as regulatory, browser and device restrictions diminish the utility of cookie-based identifiers as sources for personalization data.
- Accelerating the deployment of new personalized experiences through templates. Many personalization engines offer channel and use-case-based templates so users can set up new experiences without code and alleviate potential developer bottlenecks.
- Providing sophisticated AI out of the box. While there is often an additional fee, many providers offer built-in, customer-level predictions that can be used for triggering, segmentation or offer assignment.

Obstacles

- **Confusing technology landscape:** Personalization engines compete against marketing point solutions, multichannel marketing hubs, digital experience platforms and customer data platforms. This makes for a confusing set of options and difficult POC comparisons when disparate vendors participate.
- **Lack of commitment to technology:** Perhaps due to overlapping personalization capabilities and measurement challenges, only 6% of respondents to Gartner's 2020 Marketing Technology Survey said they would prioritize keeping their personalization engine in the event of a martech budget cut.
- **Hampered measurement:** Cookie deprecation is limiting individual level tracking and measurement, especially when assessing impact across multiple devices or sessions.
- **Low utilization of capabilities:** Underinvestment in training or process development is prevalent in this market. The average utilization of personalization engines features is 50%, second-lowest across 29 technologies tracked.

User Recommendations

- Pilot personalization using existing resources (data, talent, technology, content) to prove results and justify budget. Use experimentation, including holdout testing, as an efficient and robust evaluation tool for these pilots.
- Audit your martech stack for gaps in analytics, segmentation, testing, real-time triggering and AI capabilities to set personalization engine requirements.
- Identify and map sources of customer data, behavioral and contextual data and business intelligence data (e.g., inventory levels) to understand data integration needs.
- Allocate staff to personalization project management, testing, content creation, channel management, campaign planning and execution.
- Invest in training to increase personalization engine adoption and utilization. Evaluate vendor training resources and customer success teams to speed-up instruction.

Sample Vendors

Adobe; Algonomy; Dynamic Yield; Insider; Salesforce; SAP Emarsys

Gartner Recommended Reading

Use Tailored Help to Personalize Digital Commerce

Use Personalization to Maximize Digital Performance

Magic Quadrant for Personalization Engines

Critical Capabilities for Personalization Engines

Use Customer-Directed Engagement Models to Earn First-Party Data for More Effective Personalization

Climbing the Slope

Indoor Location Intelligence

Analysis By: Annette Zimmermann

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Indoor location intelligence refers to services and solutions that generate, process and analyze data in an indoor environment. They provide insight on the location (and movement) of objects and people from a historic, real-time or predictive perspective. The underlying technologies are wide-ranging and include Wi-Fi, Bluetooth low energy (BLE), infrared, ultrasound, RFID, ultrawideband (UWB), video analytics and lidar.

Why This Is Important

The two broad use cases for indoor location intelligence are people monitoring and asset tracking, and these can be divided into hundreds of subuses. Gartner clients continue to inquire about indoor location intelligence solutions to address a wide range of business problems but probably most importantly to count visitors, to perform time and motion studies, to find (mobile) assets and prevent accidents. At the beginning of the pandemic, many organizations looked to use location intelligence to manage social distancing.

Business Impact

We see strongest growth of indoor location intelligence in healthcare, retail and manufacturing, followed by hospitality, public transport/airports and the public sector. Each vertical presents different benefits/impacts for indoor location intelligence. In healthcare, hospitals benefit from asset tracking, patient tracking and monitoring, and staff tracking to increase efficiencies and lower cost, while visitors benefit from indoor navigation and a better customer experience.

Drivers

The drivers identified are as follows:

- 5G will generate submeter location accuracy with the Third Generation Partnership Project (3GPP) Release 17 and so this technology could become a serious contender to the existing Wi-Fi, BLE and other technologies. Communications service providers have not invested (yet) much in indoor location services but this could change as 5G location data could serve several use cases. These use cases would be likely focused on people tracking in the beginning, due to the availability of smartphones.
- Lidar emerged as a new technology to measure distance between assets or people for location intelligence. Some vendors started to integrate lidar into their existing wireless location technology portfolios. Moreover, a growing number of indoor location services platforms integrate with computer vision and closed-circuit TV (CCTV) systems to perform people counting and/or measure distance between people.
- New technologies are driving indoor location intelligence forward. For example, 3D mapping and augmented reality wayfinding represent an intersection between location and immersive technologies.

Obstacles

- **Technology choice:** Some technologies provide centimeter accuracy versus 4 meters to 5 meters, but the high-precision technologies tend to be more expensive and cumbersome. Hence, there is a trade-off and organizations need to precisely define their use cases to determine what accuracy level they need.
- **Data privacy:** Location data is sensitive data and needs to be treated as such, especially in an external, client-facing situation. Capture and analysis of location data of visitors in large venues such as shopping centers, museums and stadiums, often requires consent.
- **Privacy regulations:** These vary widely in different markets, therefore location data needs to be handled differently in one location compared to another.

User Recommendations

- Demonstrate awareness of the direct trade-off between location accuracy and cost, and deploy the technology that supports your use case. Overdelivery on accuracy will significantly increase costs, while underdelivering on accuracy will bring limited value and the project may fail.

- Assess which type of customer data you need to collect, store and process, and for what purpose. Establish different scenarios that categorize the data types. These categories should be location data of objects versus people, and then further refined by anonymized versus identifying data. This will help you determine which data privacy regime to follow.
- Employ transparency toward staff, customers, and regulatory authorities on when and what location data is processed/stored, emphasizing the safety aspects of your solution and the fact that personal location data is not tracked off-premises.

Sample Vendors

AiRISTA Flow; CenTrak; Purple; Quuppa; Ubisense; Zebra Technologies.

Gartner Recommended Reading

Magic Quadrant for Indoor Location Services, Global

Competitive Landscape: Indoor Mapping

Market Guide for Indoor Location Application Platforms

Architecting for Location

Virtual Customer Assistant

Analysis By: Annette Jump

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Definition:

A virtual customer assistant (VCA) is an application that engages, delivers information and/or acts on behalf of an organization's customer. It consists of five elements: a conversational customer-facing user interface that receives and delivers inputs and outputs, a natural language processing engine, a dialogue manager, a search engine that traverses data repositories through enterprise integrations, and a machine learning capability.

Why This Is Important

VCAs are the most prevalent use case of VAs and are being adopted by many organizations to scale and automate customer-facing interactions. The adoption continues to expand, pushing some use cases into the mainstream adoption phase, but new use cases in healthcare, digital commerce or brand marketing are also emerging. Many of them are advanced VAs targeting specific domains, like sales or recruitment, with enhanced conversational capabilities and improved ability to understand user context.

Business Impact

A VCA is a special-purpose VA for customer service, sales or marketing goals. The top business value benefits that organizations are getting with VCAs are improving operational efficiency, reducing costs and enabling 24/7 support, while improving the customer experience. This is enabled by moving engagements to self-support channels with faster time to resolution. VCAs can also be used for proactive advice and engagement to build loyalty and customer satisfaction.

Drivers

A VCA is now the first contact point to support high-volume customer interactions via digital engagement channels or within call centers. It can be a moderator of a social community, a guide on your mobile device to purchase new fitness equipment or a chat agent to help you open a bank account. The business and technology factors that are driving adoption are the following:

Business drivers:

- Customer-experience-centric objectives from organizations to automate the resolution of basic client questions and interactions
- The requirement to support business continuity and further control/reduce operational costs
- Proven productivity and efficiency gains in finance and telco verticals influencing greater adoption by others, such as retail, government, transportation and healthcare

Technology drivers:

- Advancements in natural language technology (NLT) that enable enhanced conversational capabilities and an improved ability to understand user context and support multimodal capabilities

- Prebuilt connections with enterprise applications that support easier integration and deployment
- Demand for more natural, personalized interactions with customers that drive the use of voice in VCAs

VCAs will have a bigger impact on the automation of customer interactions in the next two years.

Obstacles

There are still multiple challenges in adopting and deriving business value from VCAs:

- A lack of domain-specific knowledge or lack of integration with required internal enterprise applications and knowledge databases hinders time to value for organizations.
- The current generation of VCA deployments are often not developed optimally. Many won't reach the required customer satisfaction and engagement levels without domain-specific content and training models.
- Obstacles around organizational acceptance stems from unrealistic business expectations, unsuccessful previous VA deployments or low customer awareness about technology.
- Delivering quantifiable results around value and experience is a challenge. Many low-end VCAs deliver a poor user experience, create friction and do not deliver business benefits.

User Recommendations

- Design a proactive customer service strategy by understanding and focusing on the customers' needs, with a clear valuable reason for the contact.
- Design for end-to-end customer journeys that are responsive to continuous changes in the customer relationship stages.
- Find the greatest-frequency, low-complexity customer conversations that constitute a complete call and that can be easily automated with a low risk of customer dissatisfaction.
- Build the business case to move VCAs and customer service from a cost center to a profit center.

Sample Vendors

[24]7.ai; Amelia; Artificial Solutions; boost.ai; Druid; IBM (Watson Assistant); Kore.ai; OneReach.ai; Oracle (Digital Assistant); Yellow.ai

Gartner Recommended Reading

Emerging Technologies Round Up: Virtual Assistants Advance to Tackle Complex Knowledge Work

Emerging Technologies: Top Customer-Facing Use Cases for Advanced Virtual Assistants

Emerging Technologies: Top Use Cases for Advanced Virtual Assistants in Enterprise Operations

Emerging Technologies: Top Business Value Patterns in Advanced Virtual Assistant Adoption

Emerging Technologies and Trends Impact Radar: Artificial Intelligence, 2021

Social Analytics

Analysis By: Melissa Davis

Benefit Rating: Moderate

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Definition:

Social analytics applications assist organizations in collecting, measuring and interpreting the posts, interactions and associations among people, topics, ideas and other content types on social media.

Why This Is Important

Most data and analytics leaders are aware of the marketing, sales, communications and customer service use cases. However, many other capabilities may also be relevant. These tools can be used for a variety of purposes, including HR, product, risk management and supply chain. Use cases include:

- Keyword monitoring
- Measuring campaign success
- Competitive analysis
- Influencer analysis
- Identifying market trends
- Reputation monitoring
- Crisis management

Business Impact

Social analytics is useful for organizations to make real-time decisions and predict future trends based on the breadth of open dialogue and intelligence provided. Examples include:

- Product teams analyzing market feedback to understand product use and emerging product categories.
- Marketers and CX leaders measuring brand sentiment and competitive share of voice.
- CX analysts identifying early warning signals like sources of customer satisfaction and process breakdowns.

Drivers

- **Adoption of Social Analytics Across the Enterprise.** The use of social analytics applications in marketing or market research is well-established. Social analytics applications supporting broader use cases (in risk management, for example) are less common but readily available from a technology perspective. CX analytics vendors will most likely build or acquire pieces of social analytics functionality. Social media marketing suites will be most important by providing publishing capabilities and extending into digital customer service.

- **Growing Diversity of Data Sources Analyzed Beyond Text, Including Image, Call Center Audio and Video.** Social media analytics started with, and continues to be based on, text analytics. But image analytics is becoming increasingly important. When applied to social media analytics, image analysis is an extension of text analytics features applied to visual context. Increasingly, vendors have moved from basic logo recognition and analytics text captions to recognizing multiple elements within an image. Their ability to go beyond logos to include faces, activities, objects, emojis, memes and scenes, and video analysis means they can analyze the “why” behind a behavior, not just “what” behavior occurred. Video analytics is supported by very few vendors because it is not yet proven. The broader and more diverse the data analyzed, the more potential value in the insights.

- **Increased Adoption of Advanced Analytics, Including AI Technologies.** Many vendors have advanced their offerings from basic rule-based keyword searches to apply natural language processing (NLP), artificial intelligence (AI) and machine learning (ML) to enhance sentiment analysis, analyze patterns across the buying and owning journey, and predict outcomes.

Obstacles

- Social analytics is approaching the Plateau of Productivity due the maturity within marketing teams; However, it continues to be slow moving as it is often managed by a social media team rather than a broader analytics team that can support marketing, product development, sales or HR.
- Data availability is a risk. Although Facebook has the most active users, Meta continues to restrict data access and therefore represents only a small slice of data available to social analytics tools to analyze.
- Concerns about violent, politically charged or misleading content attracts the scrutiny of citizens, law enforcement and governments. In response, various nations have drafted legislation attempting to make the social media company legally responsible for user content on its platform, although it is vague and unenforceable.

User Recommendations

- Collect new use cases by deciding which application categories you need and what information sources are important. Identify first and secondary priority use cases to help evaluate tools based on your unique needs and decisions to be made.
- Create a business case around revenue generated, cost savings or risk reduction by prioritizing business outcomes by stakeholders.
- Examine opportunities for shared cross-functional social analytics needs and use cases that could benefit from the cost, operational and insight sharing efficiencies of a shared solution.
- Explore image, video, audio and sentiment analysis in addition to text analytics to capture a more comprehensive view as new content formats surge in use.
- Consult potential partners on API and data collection limitations across their priority platforms. Review the social network's developer pages for more information on API availability.

Sample Vendors

Black Swan Data; Brandwatch; Digimind; Khoros; ListenFirst; Netbase Quid; Sprinklr; Sprout Social; Talkwalker; Zignal Labs

Gartner Recommended Reading

Market Guide for Social Analytics Applications

Market Guide for Social Monitoring and Analytics

Demystifying Social Analytics

MDM of Customer Data

Analysis By: Sally Parker

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Definition:

Master data management (MDM) of customer data enables business and IT organizations to ensure the uniformity, accuracy, stewardship, governance, semantic consistency and accountability of an enterprise's official shared customer data assets (including, for example, customers, patients and citizens). Such implementations enable downstream systems or processes to author and/or consume customer master data and conform to one or more MDM implementation styles.

Why This Is Important

Digital transformation and data-driven strategies create increased urgency around the need for consistent customer master data across business silos. Optimizing the customer experience (CX) across all touchpoints in the digital world requires an accurate, consistent and holistic view of the customer, which depends on trusted customer master data. A lack of trusted customer master data leads to fragmented experiences, increased risks and operational inefficiencies.

Business Impact

Trusted customer master data is foundational to the success of any digitalization strategy or supporting element, like CRM, digital commerce or CX. MDM programs and solutions are key components of these initiatives. The ability to correctly draw on a trusted, accurate and comprehensive single customer view helps organizations:

- Optimize the CX
- Cross-sell across products and markets

- Retain customers
- Execute end-to-end customer processes efficiently
- Manage risk and regulatory compliance

Drivers

- With an increased focus on digital transformation and acceleration, there is more customer data being generated within organizations than ever before — both from traditional and digital sources. The same is true with potential external sources of customer data, which — when aggregated with internal data —can create a massive challenge for organizations seeking a consistent, accurate and trustworthy source of all relevant customer interactions.
- The increasing adoption of applications to help organizations automate and optimize the growing number of digital interactions can create more silos of customer data. Two examples include customer data platforms (CDPs) and CRM solutions. These solutions, and others like them, create additional complexities around effective MDM of customer data.
- More traditional drivers of MDM of customer data include regulatory compliance, fraud, credit risk and multiple other operational processes. These are dependent on accurate and trustworthy customer data, and remain highly relevant even for companies prioritizing digital transformation.
- Increases in customer data and the number of systems housing it are putting pressure on companies to optimize and modernize their MDM programs to support these needs. Vendors are enhancing their capabilities to provide the added scale within their MDM processes, which are needed to handle exploding data volumes. This includes the migration of MDM software solutions to cloud and cloud-native platforms and the integration of more augmented MDM capabilities. This leverages graph, AI/ML and other new technologies to bridge the gap that exists between enterprise MDM solutions and customer data-centric applications such as customer data platforms (CDPs).
- Forward-thinking companies are also evaluating integration with future-looking data fabrics and other metadata driven approaches to serve up suggested customer data for governance in a customer MDM program.

Obstacles

- MDM of customer data continues to be inhibited by inadequate focus on MDM best practices, notably alignment with business outcomes. However, domain-specific MDM solutions and implementations are approaching the Plateau of Productivity more rapidly than enterprisewide MDM.
- Enterprisewide MDM is becoming a multifunctional data platform, increasing the overlap between customer MDM solutions and customer-data-specific applications. This increases confusion over the definition of customer master data versus application data. Broadening an MDM program scope to include application data adds risk to a customer MDM implementation.
- The capabilities of MDM technologies around context-centric and AI-driven insights generally exceed the governance maturity of most companies, hindering the value of more advanced forms of customer MDM.
- Hyped technologies in adjacent categories, like CDPs, claim to offer customer MDM features but often lack the capabilities Gartner expects.

User Recommendations

- Use an MDM style (or styles) that reflects the business strategy of the organization and delivers business value by providing trustworthy customer data for consumption in operational business processes and downstream analytics systems.
- Ensure your MDM of customer data strategy supports rightsized (i.e., small) requirements spanning multiple usage scenarios, implementation styles and data domains.
- Evaluate MDM solutions based on capabilities for data modeling and quality, integration, data stewardship and information governance, business services and workflow, measurement and manageability. Be aware of hyped technologies in adjacent categories, like customer data platforms (CDPs), which claim to offer customer MDM features but often lack the capabilities Gartner expects from enterprise MDM platforms.

Sample Vendors

Ataccama; Informatica; Profisee; Semarchy; TIBCO Software

Gartner Recommended Reading

Magic Quadrant for Master Data Management Solutions

Critical Capabilities for Master Data Management Solutions

CRM Success Requires Master Data Management Integration

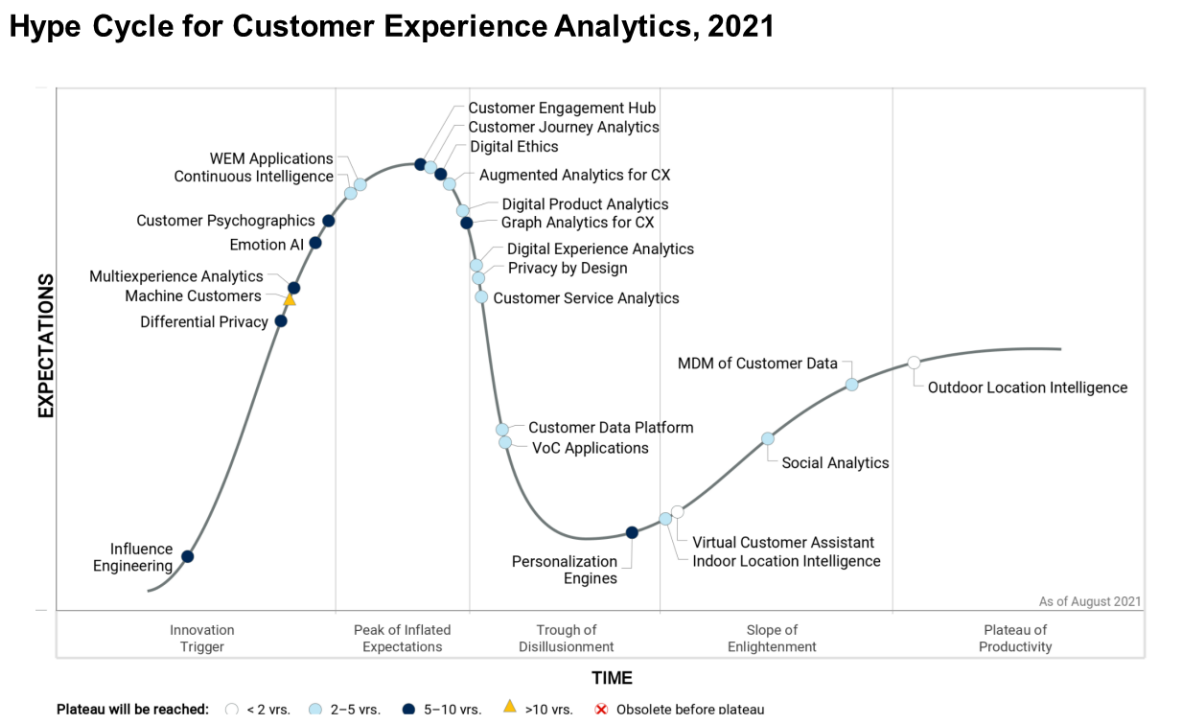
Improve CRM and Customer Data With Master Data Management

We Have MDM Software, So Why Would We Need a CDP?

Guidance Framework for Building Customer Data Mastering Services

Appendixes

Figure 2. Hype Cycle for Customer Experience Analytics, 2021



Source: Gartner (August 2021)
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Gartner

Source: Gartner (July 2022)

Hype Cycle Phases, Benefit Ratings and Maturity Levels

Table 2: Hype Cycle Phases

(Enlarged table in Appendix)

Phase ↓	Definition ↓
Innovation Trigger	A breakthrough, public demonstration, product launch or other event generates significant media and industry interest.
Peak of Inflated Expectations	During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the innovation is pushed to its limits. The only enterprises making money are conference organizers and content publishers.
Trough of Disillusionment	Because the innovation does not live up to its overinflated expectations, it rapidly becomes unfashionable. Media interest wanes, except for a few cautionary tales.
Slope of Enlightenment	Focused experimentation and solid hard work by an increasingly diverse range of organizations lead to a true understanding of the innovation's applicability, risks and benefits. Commercial off-the-shelf methodologies and tools ease the development process.
Plateau of Productivity	The real-world benefits of the innovation are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. Growing numbers of organizations feel comfortable with the reduced level of risk; the rapid growth phase of adoption begins. Approximately 20% of the technology's target audience has adopted or is adopting the technology as it enters this phase.
Years to Mainstream Adoption	The time required for the innovation to reach the Plateau of Productivity.

Source: Gartner (July 2022)

Table 3: Benefit Ratings

Benefit Rating ↓	*Definition* ↓
Transformational	Enables new ways of doing business across industries that will result in major shifts in industry dynamics
High	Enables new ways of performing horizontal or vertical processes that will result in significantly increased revenue or cost savings for an enterprise
Moderate	Provides incremental improvements to established processes that will result in increased revenue or cost savings for an enterprise
Low	Slightly improves processes (for example, improved user experience) that will be difficult to translate into increased revenue or cost savings

Source: Gartner (July 2022)

Table 4: Maturity Levels

(Enlarged table in Appendix)

Maturity Levels	Status	Products/Vendors
Embryonic	In labs	None
Emerging	Commercialization by vendors Pilots and deployments by industry leaders	First generation High price Much customization
Adolescent	Maturing technology capabilities and process understanding Uptake beyond early adopters	Second generation Less customization
Early mainstream	Proven technology Vendors, technology and adoption rapidly evolving	Third generation More out-of-box methodologies
Mature mainstream	Robust technology Not much evolution in vendors or technology	Several dominant vendors
Legacy	Not appropriate for new developments Cost of migration constrains replacement	Maintenance revenue focus
Obsolete	Rarely used	Used/resale market only

Source: Gartner (July 2022)

Document Revision History

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Hype Cycle for Customer Experience Analytics, 2018 - 2 August 2018

Hype Cycle for Customer Experience Analytics, 2017 - 19 July 2017

Hype Cycle for Customer Analytic Applications, 2016 - 26 July 2016

Hype Cycle for Customer Analytic Applications, 2015 - 31 July 2015

Hype Cycle for Customer Analytic Applications, 2014 - 30 July 2014

Hype Cycle for Analytic Applications, 2013 - 31 July 2013

Hype Cycle for Analytic Applications, 2012 - 8 August 2012

Recommended by the Authors

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Understanding Gartner’s Hype Cycles

Create Your Own Hype Cycle With Gartner’s Hype Cycle Builder 2021

Top Trends in Data and Analytics, 2022

Market Guide for Web, Product and Digital Experience Analytics

Market Guide for Social Analytics Applications

What Data and Analytics Leaders Need to Know About Customer Data Platforms

Market Guide for Customer Journey Analytics

Emerging Technologies and Trends Impact Radar: Customer Analytics for Customer Experience

Service and Support Customer Experience and Analytics Primer for 2022

How to Drive Value From Customer Experience Analytics

The Evolution From Voice of Customer to Experience Insight Management Applications

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Table 1: Priority Matrix for Customer Experience Analytics, 2022

Benefit ↓	*Years to Mainstream Adoption*			
	Less Than 2 Years ↓	***2 - 5 Years*** ↓	***5 - 10 Years*** ↓	***More Than 10 Years*** ↓
Transformational		Continuous Intelligence	Customer Technology Platform Digital Twin of a Customer Emotion AI Influence Engineering	
High	Virtual Customer Assistant	Augmented Analytics for CX Customer Journey Analytics Customer Service Analytics Digital Ethics Indoor Location Intelligence MDM of Customer Data VoC Applications WEM Applications	Differential Privacy Personalization Engines Personification	Machine Customers
Moderate		Customer Data Platform Customer Psychographics Digital Experience Analytics Graph Analytics for CX Privacy by Design Product Analytics Social Analytics	Multiexperience Analytics	

Benefit	Years to Mainstream Adoption			
↓	Less Than 2 Years ↓	2 - 5 Years ↓	5 - 10 Years ↓	More Than 10 Years ↓
Low				

Source: Gartner (July 2022)

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