

Consumer Packaged Goods digital transformation: **where to invest now**



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Executive summary

The \$6T global consumer packaged goods (CPG) industry—comprising Food & Beverage, Personal Care & Home, and Beauty—has thrived for over 40 years. But the last five years have been highly challenging and disruptive amidst a changing competitive landscape marked by new consumer behaviors and digital-native entrants. ‘Business as usual’ does not do the trick anymore—and leaders recognize that innovation must accelerate. The adoption of digital and analytics offers CPG companies the opportunity to drive growth and deliver productivity. The effort needed to take advantage of this value potential will be worth it. The companies that adopt digital technologies early and at scale outperform traditional incumbents in revenue and EBIT growth¹.

At Google we have been working with CPG industry leaders for over 20 years, bringing our deep understanding of consumer intent across properties like Search, YouTube, the Google Assistant, and Maps to better assist brands in acquiring new consumers and creating a stronger connection with the ones they already have. With Google Cloud we are excited to build on our longstanding partnership with brands to drive innovation across the business. The adoption of digital and analytics use cases and cloud can help companies bring new capabilities to market more quickly, innovate more easily, and scale more efficiently—while also reducing technology risk, thus serving as a catalyst for CPG transformation.²

Companies that adopt digital technologies early and at scale outperform traditional incumbents in revenue and EBIT growth¹

1. “Digital strategy in a time of crisis,” McKinsey & Company, April 22, 2020

2. “How CIOs and CTOs can accelerate digital transformations through cloud platforms,” McKinsey & Company, September 15, 2020

In our conversations with CPG customers, we get asked time and again what use cases for digital and analytics have the most potential for bottom line impact in the new normal. This ebook—based on research, inputs from industry experts, and customer experiences—is an attempt to answer these questions in a holistic way, taking an outside-in approach to identify pockets of value creation from digital use cases including cloud, AI/ML and analytics for CPGs in the ‘new normal’.

Our research looked at the breadth of digital and analytics use cases for investment by CPG companies across the full value creation process, including consumer acquisition, access to markets, and operational effectiveness.

In total, we identified over 80 use cases for CPGs and prioritized them given their impact on industry P&Ls, their ease of implementation regarding technology and data requirements and organizational change management, and their effectiveness in further achieving environmental-social-governance (ESG) goals. Our research found three core areas where companies could drive impact: unlocking consumer growth with data-powered insights; transforming go-to-market in the omnichannel ecosystem; and driving connected, efficient, and sustainable operations.

Together, the top application areas have the potential to drive at least \$490B in value creation for the total CPG industry by 2023. CPG companies that choose to leverage the cloud sooner will reap the benefits faster, as foundational investments in cloud-based solutions that leverage AI/ML and analytics yield greater value as more and more sophisticated use cases are adopted.

Three core areas of growth for CPGs with cloud adoption:

- 1 Unlocking consumer growth with data powered insights
- 2 Transforming go-to-market in an omnichannel ecosystem
- 3 Driving connected and efficient, sustainable operations

Preface: The transformation cloud era

There are moments in our history when everything changes. How we live, how we work, how we communicate, how we learn, all seem to transform in what seems like an instant—making what came before feel distant and of another era. As we stepped back at Google Cloud, we saw the incredible changes that were happening with COVID-19 impacting consumer behavior, which in turn had implications for our industry customers. Blame those pesky yeast and toilet paper shortages, if you will, but during the pandemic, almost one-third of U.S. shoppers purchased from a brand that was new to them.³ And while deal-seeking is not new, searches for ‘best affordable’ grew globally by over 60% year-over-year.⁴ CPGs rose to the occasion and assumed responsibility for safeguarding people and communities by meeting peak demand across key categories.

Through these turbulent times, CPG boards and executives recognized that recovery, as it has been throughout history, will be a catalyst for transformation. At Google, we believe that the cloud will play a key role as a digital transformation agent more than any other time in history.

Today, the cloud is understood to be a network of remote servers around the globe that are linked together so they can function as a single ecosystem. Cloud computing, in turn, refers to the delivery of these on-demand computing services—including storage, processing power, or applications—typically over the Internet. This relieves CPGs from having to own their computing infrastructure and data centers themselves, and instead allows them to rent access to storage or applications from companies like Google Cloud.



During the pandemic almost one-third of US shoppers purchased from a brand that was new to them³

3. Google commissioned Ipsos COVID-19 tracker, U.S. n=1000 online consumers 18+ per market. June 25-28.

4. Google Data, Global English, Mar 25, 2020 - May 23, 2020 vs Mar 25, 2019 - May 23, 2019

While the ROI of these cloud migrations is important, the really interesting conversations happening now are how we get to a **Transformation Cloud**, where we're not just making an infrastructure decision, but truly embedding the need and capability of digital to transform every person and team in your organization. CPGs are also increasingly using the cloud to deploy artificial intelligence (AI) and machine learning (ML) models—because only the cloud offers them the elastic and scalable environment they need to fully realize value from these technologies.

In 2018, the McKinsey Global Institute estimated that an additional \$13T could be added to global GDP by 2030 via digitization, automation, and AI. Yet across the world, industries have, on average, barely matured past 25% of their full potential for digitization. Within CPG, digitization is closer to 30% given a relatively direct connection to the consumer, faster capital turnover, and global presence—all factors that help drive digitization—but this is still short of the digitization level in the closest industry, retail, which averages nearly 50%.⁵ As such, CPG remains one of the least digitally mature industries, despite being one of the most mature in analytics.

\$13T

estimated additional value that could be added to global GDP by 2030 via digitization, automation and AI according to McKinsey Global Institute them⁵

30%

estimated current digitization in CPG⁵



As CPG companies—including marketplace giants, discounters, and small, digitally native and agile brands—are battered by disruptive trends, the transformation cloud and the increasing number of use cases it powers using data, AI/ML, and analytics becomes ever more important. For CPG CxOs, the cloud answers age-old questions around consumer acquisition (e.g. “How do we manage display and promotion on the physical and virtual product shelves to best attract consumers?”), emerging questions around loyalty (e.g. “How can we predict loyalty or ease loyalty in an effort to preserve the brand momentum we gained during the pandemic?”), and persistent questions around cost efficiencies (e.g. “How can we leverage new technologies such as IoT, digital twin, predictive maintenance, and so on to increase efficiencies all along the value chain?”). What’s more, those companies that choose to ‘go digital’ end up generating more than 50% of the total digital revenue in their industry.⁶ Said otherwise, going digital not only enables companies to more effectively and efficiently drive toward answers for their top priorities, but also capture larger portions of the growing digital pie. Read on to identify where you should be investing to thrive in this era of the transformation cloud.

Companies that choose to ‘go digital’ end up generating more than

50%

of the total digital revenue in their industry⁶



5. Google commissioned Ipsos COVID-19 tracker, U.S. n=1000 online consumers 18+ per market. June 25-28.

6. Ibid.

Chapter 1

The state of consumer packaged goods



Waves of change in CPG

The global CPG market comprises goods and services such as distribution. It's a large and complex ecosystem. Within goods manufacturing and marketing, the CPG industry comprises three key sub-sectors, which combined made up over \$6.1T in global revenues in 2019: Food & Beverage (F&B), Personal Care & Home (PC&H), and Beauty.⁷ As there are differences across each of the sub-sectors, there are also differences in the proliferation of digital and analytics. In the past decade, differing levels of investment have shaped how sub-sectors have grown, and will continue to shape their recovery post-pandemic.

Super simplified view of global CPG value chain



7. Source: Analysis based on Euromonitor data

Global CPG sub-sector estimated revenues



Global CPG sub-sector and distribution estimated revenues in MSP* (2019, \$B)

The COVID-19 pandemic—which is first and foremost a global health crisis and a massive economic disruption—amplified the need for cloud, digital, and analytics across CPG companies not only for growth, but also for resilience. Market trends, like the push toward higher transparency in consumer goods, prevailed. Despite shortages in goods across the U.S. and the world, omnichannel reshaped the shopping experience for most, price sensitivity peaked given the economic downturn, consumers switched brands (and then switched again), and certain product categories experienced peak demand.

* Manufacturer's Selling Price - defined as the price that a CPG sells its products to customers who may be wholesalers, retailers or end consumers excluding any trade discounts

The hallmark of success for CPG companies in this ‘next normal’ will be in ruthless prioritization across consumer growth, efficient and sustainable operations, and omnichannel ecosystems. From a consumer perspective, CPG companies will need to conceive and create new products, reconstruct their image of the consumer, understand how to reach each with a personalized message, create rich experiences that bond them to the brand beyond any advertising, and better understand how to allocate marketing dollars—all in an effort to maximize consumer lifetime value. From an operational standpoint, companies will need to better predict demand, maximize operational efficiency of equipment, minimize waste production and energy usage, optimize inbound and outbound logistics operations (not to mention where to locate new plants and distribution facilities), and assess whether existing supplier relationships are still valuable. Finally, from a go-to-market and channel perspective, companies will need to determine the right mix and assortment of goods for offline and online channels, and optimize trade promotion, all in an effort to ensure the right product is available to the right consumer—at the right time, at the right outlet, and in the right place in the store.

Taking a big step back, all this sounds incredibly overwhelming—and yet it is possible by leveraging cloud as a catalyst for transformation. For those CPG companies with the desire and capacity to shape their futures, there are real opportunities to innovate.

The following chapters explore digital and analytics in a practical way, reviewing the highest impact use cases for CPG companies across the value chain, as well as the barriers to implementation and how to ensure success.



Chapter 2

Top use cases for digital transformation



Overview of use cases and impact areas

To understand the top transformation opportunities for CPG in this new normal we commissioned a study to explore the impact the pandemic had on the CPG market. The study covered consumer acquisition, access to markets, and operational effectiveness. It also identified what cloud use cases could be leveraged by CPG companies to drive top-line growth, reduce costs, and foster environmentally—or socially—beneficial effects. The full range of digital and analytics use cases with application potential in CPG were rigorously assessed based on an analysis of industry reports, best practices from CPG players and expert conversations; out of these total volume of digital and analytics use cases, 80+ emerged as key opportunities.⁸ These can help companies unlock value across three key areas today and into the future: consumer growth, go-to-market, and efficient operations.

Example digital and analytics use cases across key areas of opportunity⁹

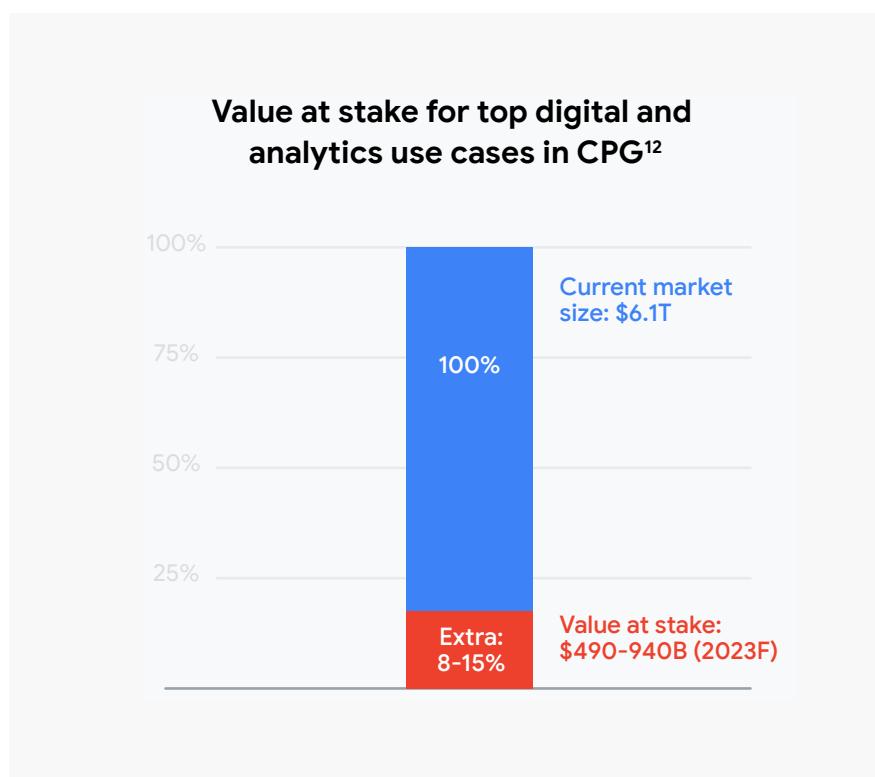
1	2	3
<p>Unlocking consumer growth with data powered insights</p> <ul style="list-style-type: none">• Marketing spend optimization• Attribution modelling for ROI maximization• Personalized marketing at scale• Digitally enabled experiences• Design-to-value• Enhanced Consumer profiling (Consumer 360)• Predictive customer analytics• Social media analytics and influencer channel optimization• A/B testing for advertising and promotions	<p>Transforming go-to-market in an omnichannel ecosystem</p> <ul style="list-style-type: none">• Offline channel-specific mix optimization• Online marketplace channel optimization• Retail execution• Trade promotion optimization• Ecommerce channel set-up and hosting• AI-powered beauty apps• Personalized product recommendations	<p>Driving connected and efficient, sustainable operations</p> <ul style="list-style-type: none">• Waste-reducing and energy efficiency-optimizing production process adjustments• Real-time performance and OEE management• Demand forecasting-driven supply planning• Digital twin for supply chain• Sustainability-focused supply chain optimization and reporting• Ingredient traceability

8. Totality of digital and analytics use cases with application potential in CPG were rigorously assessed based on an analysis of a wide range of CPG industry reports, best practices from CPG players and initial expert conversations; out of these total volume of digital and analytics use cases, 80+ emerged as key use cases

9. Use cases are not listed in any particular order

Value at stake

There are 15 use cases¹⁰ that stood out from the full set of use cases based on value potential, ease of implementation (as it relates to technology and data requirements, as well as organizational championing), and effectiveness in further achieving corporate ESG goals. This subset of use cases—identified through interviews with CPG CxOs, former executives, and other CPG leaders, in tandem with industry research—has the potential to drive at least \$490B in value creation for CPGs by 2023. The value at stake is split roughly equally across the three areas of opportunities, with the third area accounting for slightly more value (39%). The implication of this is that a diversified approach of implementing use cases across these three areas of impact can help build incremental value.¹¹



At least
\$490B

in value at stake
through digital and
analytics in CPG¹⁰.

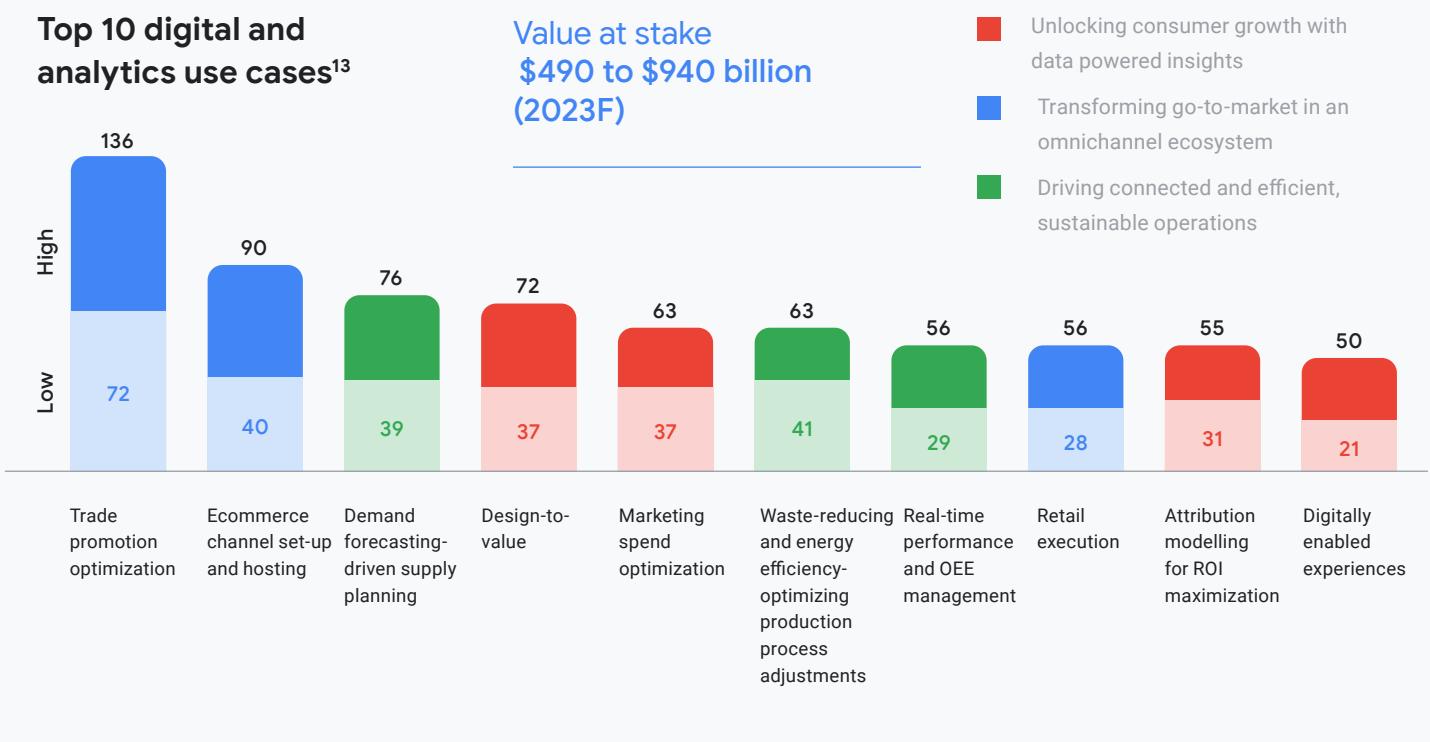
10. Long list of 80+ use cases was narrowed down to short list of 20+ use cases based on in-depth expert conversations with thought leaders in CPG domains, drawing from their experience in CPG; the short list reflects the use cases deemed to have the highest value potential among the full set of 80+.

11. Source: Analysis based on Euromonitor data

12. Global CPG goods revenues in 2019 were \$6.1T

When we look at industry sub-verticals the value at stake and top use cases differ. This is not surprising. Given sector specifics, a typical Food & Beverage company will make use of digital and analytics differently than a Beauty or Personal Care & Home company. Below we've shared a view of the Top 10 cases for the CPG industry as well as Food & Beverage, Personal Care and Home and Beauty sub verticals.

Consumer Packaged Goods



10. Long list of 80+ use cases was narrowed down to short list of 20+ use cases based on in-depth expert conversations with thought leaders in CPG domains, drawing from their experience in CPG; the short list reflects the use cases deemed to have the highest value potential among the full set of 80+

11. Source: Analysis based on Euromonitor data

12. Global CPG goods revenues in 2019 were \$6.1T

13. Global CPG goods revenues in 2019 were \$6.1T. Value potential is expressed as a range of value that can be realized for each use case for the industry based on a number of impacting factors e.g. efficiency of implementation.

Food & Beverage

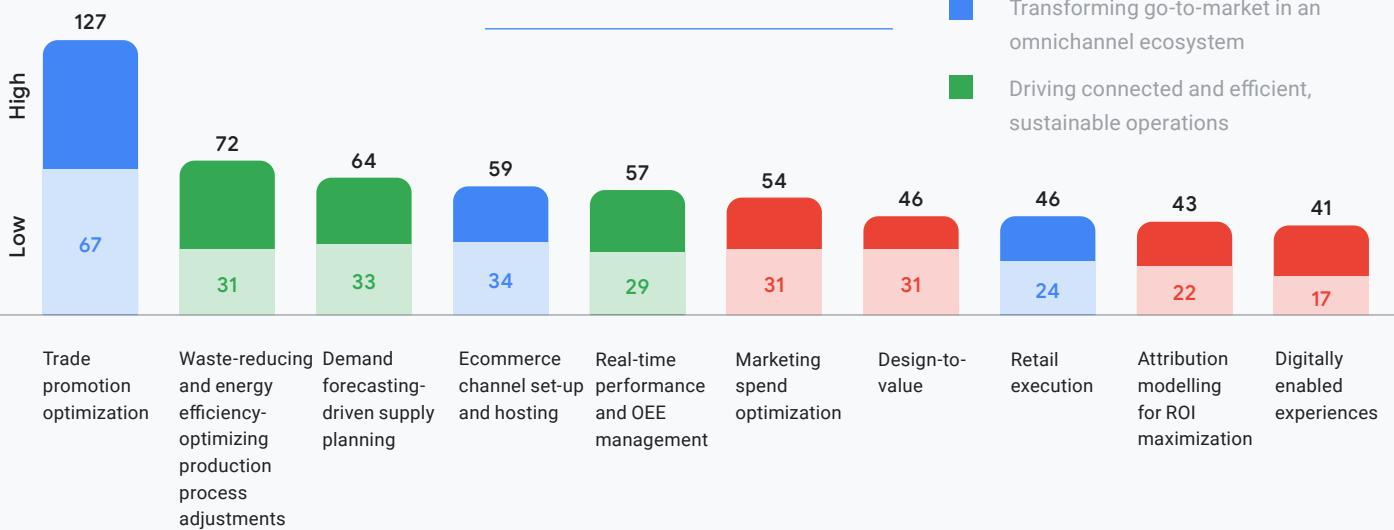
Top 10 digital and analytics use cases¹³

Value at stake \$402-784B (2023F)

█ Unlocking consumer growth with data powered insights

█ Transforming go-to-market in an omnichannel ecosystem

█ Driving connected and efficient, sustainable operations



Personal Care & Home

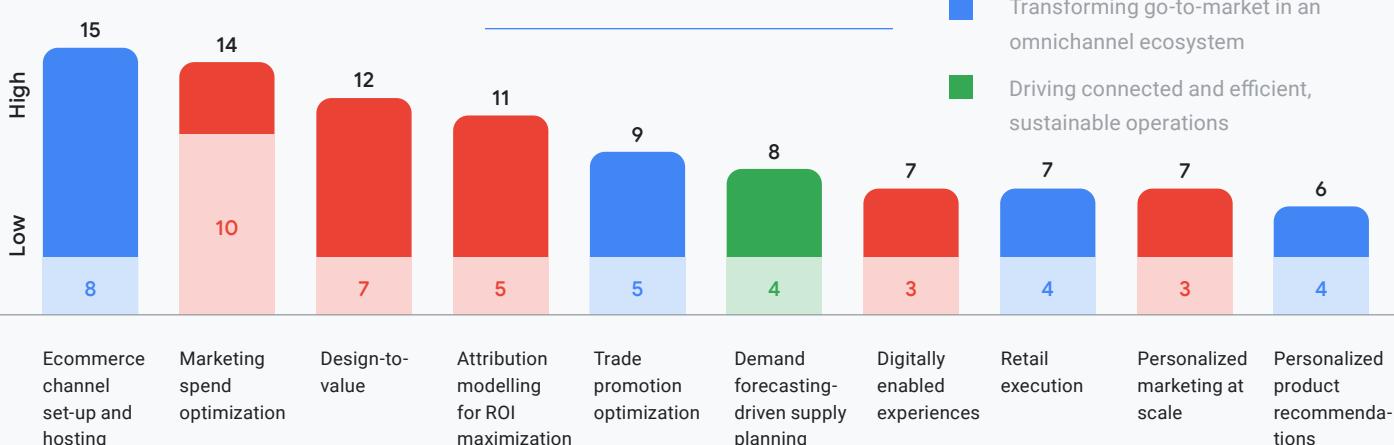
Top 10 digital and analytics use cases¹³

Value at stake \$64-119B (2023F)

█ Unlocking consumer growth with data powered insights

█ Transforming go-to-market in an omnichannel ecosystem

█ Driving connected and efficient, sustainable operations

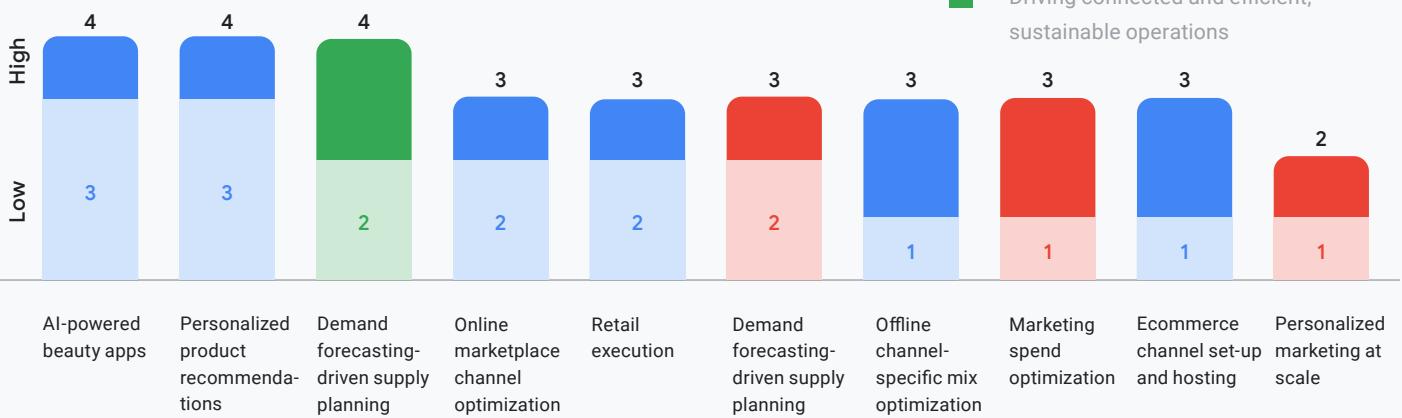


Beauty

Top 10 digital and analytics use cases¹³

Value at stake \$21-37B
(2023F)

- Unlocking consumer growth with data powered insights
- Transforming go-to-market in an omnichannel ecosystem
- Driving connected and efficient, sustainable operations



All numbers represent value at stake in \$B, 2023F

Decoding value potential for your business

The size of the potential value at stake in the preceding pages is evaluated from an industry perspective and across all use cases. For instance, if the entire Food & Beverage industry (including all the individual players in it) were to adopt all of the top use cases for digital and analytics, it would see value accrue to the totality of companies in the range of approximately \$402B to \$784B. The industry, however, is made up of many companies, each of whom would command only a share of the total industry value at stake. And, of course, each of these companies would likely only implement a select number of use cases at once. This goes to show that the total opportunity for the vertical and across all use cases is immense, while individual companies would see only a fraction of that total value accrue to them, depending on their size and which use cases they adopt.

For instance, for an average Food & Beverage player with \$10B in revenue, the use case 'marketing spend optimization' would translate into a \$43M to \$64M opportunity. This is based on an evaluation of the profit & loss (P&L) statement of a typical Food & Beverage player, and particularly where the use case may have an effect. In the case of marketing spend optimization, it would reduce cost (particularly, P&L line items related to paid media spend) because it more efficiently allocates marketing dollars. Thus, implementing this use case could help an individual Food & Beverage company with \$10B in revenues save paid media expenses in the range of \$43M to \$64M. Aggregating these numbers across all major Food & Beverage companies and across all use cases then leads to the total industry value at stake.

In the next section, we take a deeper look at the 15 top use cases by impact area and the key business goals they help CPG companies achieve. The use cases collectively cover the top 10 areas of opportunities across all key sub-verticals: Food & Beverage, Personal Care & Home, and Beauty. While the use cases are common across all key sub-verticals the value they unlock for each sub-vertical differs. For simplicity under each use case we've picked a typical company in one CPG sub-verticals to illustrate the value each use case can unlock. This is for ease of illustration only and does not imply that the use case as described is restricted to that specific sub-vertical.





Top 15 use cases across key areas of opportunity

1

Unlocking consumer growth with data powered insights

- Marketing spend optimization
- Attribution modelling for ROI maximization
- Personalized marketing at scale
- Digitally enabled experiences
- Design-to-value

2

Transforming go-to-market in an omnichannel ecosystem

- Offline channel-specific mix optimization
- Online marketplace channel optimization
- Retail execution
- Trade promotion optimization
- Ecommerce channel set-up and hosting
- AI-powered beauty apps
- Personalized product recommendations

3

Driving connected and efficient, sustainable operations

- Waste-reducing and energy efficiency-optimizing production process adjustments
- Real-time performance and OEE management
- Demand forecasting-driven supply planning

Unlocking consumer growth with data-powered insights

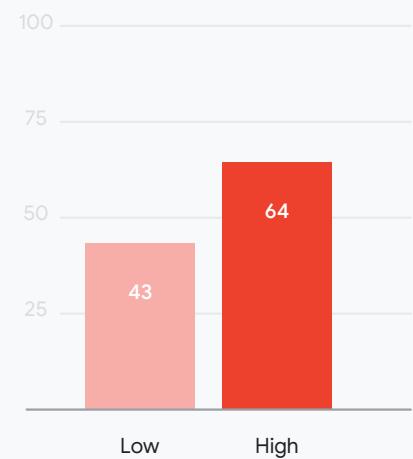
Marketing spend optimization

Marketing spend optimization enables allocation of a CPG's marketing funds to maximize impact on strategic goals. This use case will help decide ex ante (i.e. prior to running marketing efforts) an optimal budget allocation on as granular a level as possible (ideally on a campaign level).

Our research reveals that a typical Food & Beverage company could lower their marketing spend by \$43M to \$63M, if they deployed this use case at scale. In other words, it's a great opportunity to save marketing dollars by distributing budget across the right marketing channels and the right audiences.

For example, a CPG company may use a marketing spend optimization solution to set the marketing mix and channel budgets on a quarterly basis for their portfolio brands, taking into consideration their history, context, and goals. They might also use it to allocate the optimum daily budget to a coordinated search engine marketing and social media remarketing campaign prior to launch.

Value at stake for a typical Food & Beverage company (\$M, 2023F)¹



1. Based on a typical Food & Beverage company with \$10B revenue

Business Impact



Cost reduction

Unlocking consumer growth with data-powered insights

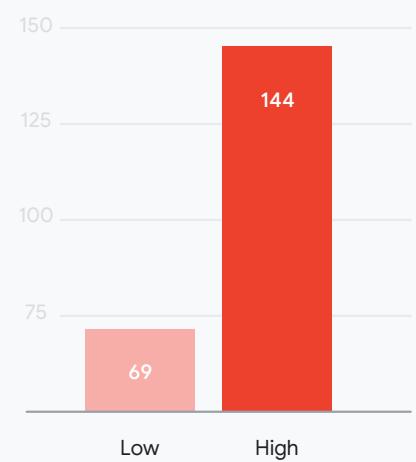
Attribution modelling for ROI maximization

This assesses the impact past marketing investments have had on a CPG company's business goals (e.g. sales generated through their DTC model). It entails analyzing the performance of marketing and advertising efforts ex post (e.g. after completion of individual campaigns) on as granular a level as possible to surface the highest return-on-investment (ROI) channels and campaigns.

Our research shows that using advanced analytics powered by AI/ML is a major driver for top-line growth, as insights into consumer decision journeys can boost sales; as well as cost reduction, as external marketing spend can be streamlined to focus on the highest-performing channels.

Leveraging digital and analytics can bring new levels of visibility to profitable promotions, which—when deployed at scale—can represent between \$69 M and \$144M in value at stake to a typical Personal Care & Home company.

Value at stake for a typical Personal Care & Home company (\$M, 2023F)¹



1. Based on a typical Personal Care & Home company with \$10B revenue

Business Impact



Top-line growth



Cost reduction

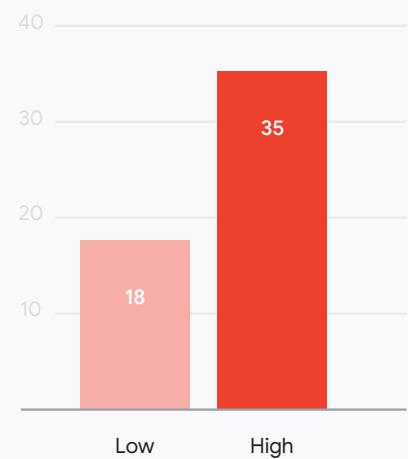
Unlocking consumer growth with data-powered insights

Personalized marketing at scale

Personalized marketing at scale is all about reaching individual consumers with a personalized message in an effort to cross- or upsell. Based on the insights a CPG company would have about an individual consumer, the goal would be to deliver the right message at the right time in the right place.

Using digital and analytics to personalize and deliver such messages is a priority topic for many CPGs. Employing this use case promises combined cost savings and revenue growth in the range of \$18M to \$35M. This is because, right now, it's typically a manual and time-consuming process for marketers. Automating the task should add value to both CPG top and bottom lines.

Value at stake for a typical Food & Beverage company (\$M, 2023F)¹



1. Based on a typical Food & Beverage company with \$10B revenue

Business Impact



Top-line growth



Cost reduction

Google Cloud and Reckitt Benckiser Collaborate to Build Consumer Engagement Across Brands

Google Cloud is collaborating with Reckitt Benckiser (RB) to drive stronger customer engagement as the consumer health, hygiene and nutrition company embarks on wide-scale digital transformation. The alliance, which is a result of RB's multi-year digital transformation, will see Google Cloud unify the company's extensive data landscape, building new capabilities around consumer identification, journeys, and behaviors. In addition, the partnership will provide the foundation to enable RB to manage data and analytics, measurement and attribution, and automated martech activation across all of its channels - web, social, in-store, and more.

Google Cloud and RB will focus on pulling together RB's multiple data sources to better power consumer segmentation and marketing campaign measurement. Once digitized in Google Cloud, RB will use Google's machine learning (ML) capabilities to evaluate ROI and plan future campaigns more effectively. RB will also run its own ML and auto-ML models, generating insights to optimise media spend, and creating more natural digital journeys as consumers go from awareness, to purchase, to advocacy, whilst always respecting data privacy.

RB is currently testing use cases on data in the UK, United States, Brazil, and India. RB's new digital hubs across the globe will drive consistency and further efficiencies with its marketing teams, while also enabling quick scale up of these capabilities prioritized for the top 50 brand-market combinations the hygiene business holds.



"In our journey to create a cleaner, healthier world, this close collaboration with Google Cloud is a very important milestone for our brands. Only by utilizing data will we be able to better serve consumers and shoppers and create meaningful experiences for them."

Fabrice Beaulieu
EVP Group Marketing
Excellence & EVP Category
Development Organisation
Hygiene, Reckitt Benckiser

Source: [Google Cloud and Reckitt Benckiser Collaborate to Build Consumer Engagement Across Brands With Data and New Digital Capabilities](#)

Unlocking consumer growth with data-powered insights

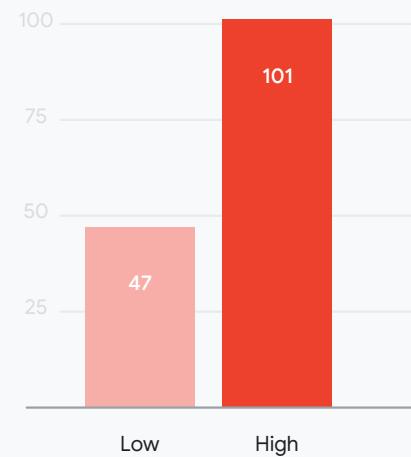
Digital enabled experiences

Beyond purely offering products, CPGs are increasingly striving to engage consumers and give them experiences they appreciate outside of the consumption of products. They want to come up with new ways of bringing consumers closer to brands, which are more effective than plain vanilla advertising.

Think, for instance, of an app for young mothers with tips and advice about newborns, which builds engagement and goodwill for the brand with its consumers at a critical life stage. It is not directly aimed at selling baby products but helps create a connection and a potential source of product insights.

We estimate that a typical Personal Care & Home company would have a value at stake in the range of \$47M to \$101M in such a use case. This comes from decreasing advertising costs, while increasing sales.

Value at stake for a typical Personal Care & Home company (\$M, 2023F)¹



1. Based on a typical Personal Care & Home company with \$10B revenue

Business Impact



Top-line growth



Cost reduction



ESG

Unlocking consumer growth with data-powered insights

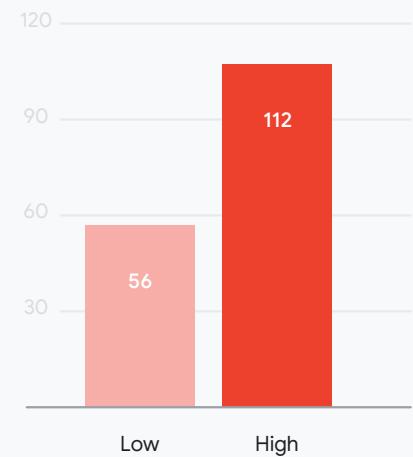
Design-to-value

Design-to-value is a holistic approach to product innovation which uses consumer insights and analytics to understand consumer sentiment and trends, and identify promising product innovation areas early. It would also entail the subsequent design and development of products and product packaging, minimizing production and packaging costs.

Imagine coming up with a radically new CPG product based on trend observations from online forums, and producing and packaging that product. Or, imagine taking an existing product and understanding which attributes consumers care about most—and then take out 30% of the packaging and raw material cost, without impacting consumer satisfaction.

We estimate the value at stake to be between \$56M to \$112M, for a sample Food & Beverage player with \$10B in yearly revenue. Meaning, more than 10% of the top line could be generated from this use case, largely through reduced input costs.

Value at stake for a typical Food & Beverage company (\$M, 2023F)¹



1. Based on a typical Food & Beverage company with \$10B revenue

Business Impact



Cost reduction



ESG

Transforming go-to-market in an omnichannel ecosystem

Offline channel-specific mix optimization

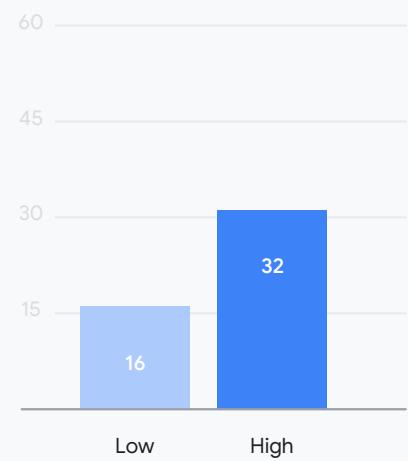
What is the right mix of offline channels and assortment per channel?

CPGs ask this key question, day in day out. This use case focuses on determining the right strategy for offline channels based on a review of individual retailers. Using data-driven insights, CPGs aim to allocate the right assortment mix, including any bundling options, on a per-retailer/per-customer basis.

The potential rewards are great. Implementing this use case to perfection promises to deliver between \$16M and \$32M to a typical Beauty company. This is largely thanks to reduced sales, general and administrative (SG&A) costs, and potential uplifts in revenue.

If a CPG could, for example, leverage data and analytics to easily surface which products and product sizes should be offered in convenience stores versus wholesalers, that would likely save their commercial teams untold hours of manual analysis and internal meetings.

Value at stake for a typical Beauty company (\$M, 2023F)¹



1. Based on a typical Beauty company with \$3B revenue

Business Impact



Top-line growth

Cost reduction

Transforming go-to-market in an omnichannel ecosystem

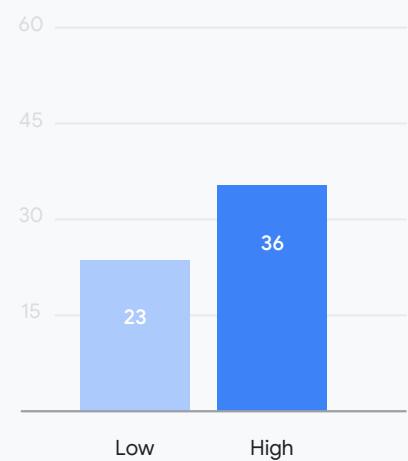
Online marketplace channel optimization

Now imagine the same—but online. In times of ecommerce, the online question matters just as much as (and in pandemic times, potentially even more than) the offline counterpart. It begs the question, what is the right mix of online marketplace channels and assortment per channel?

For instance, a CPG might be wondering how to determine their product assortment, including bundles, to list on Amazon versus Walmart.com. This is exactly what online marketplace channel optimization is all about.

What are the implications if it is done correctly? Between \$23M and \$36M—again, largely from increased revenue for a typical Beauty company. That's quite the carrot for CPGs looking to optimize their selection process for expansion into new e-retailers, and avoid tarnishing their brand image by spreading online coverage too far.

Value at stake for a typical Beauty company (\$M, 2023F)¹



1. Based on a typical Beauty company with \$3B revenue

Business Impact



Top-line growth

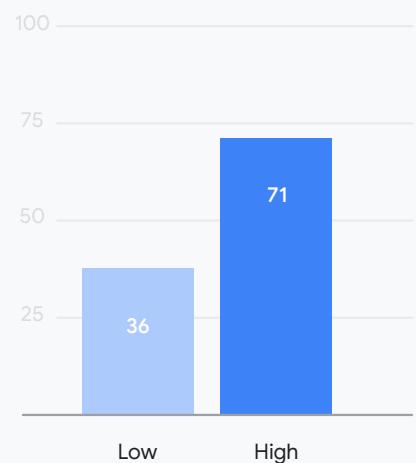
Transforming go-to-market in an omnichannel ecosystem

Retail execution

The essence of retail execution is to ensure the right product is available to the right consumer at the right time, at the right outlet, and in the right place in the store. Optimizing in-store presentation, display and shelf space use, and potentially using image recognition data to understand consumer interactions with product and impact on sales, is another aspect of retail execution. It may even involve efforts to minimize the cost-to-serve each of the outlets, using sales force automation, guided selling, and other assistance for sales to maximize efficiency from sales reps and foster field productivity.

All of this has the potential to impact CPG P&Ls positively, in the range of \$36M to \$71M SG&A cost savings with additional revenue increase for a typical Food & Beverage company. In-store sales automation to monitor promotion compliance and optimized sales order management are just two examples that can create value.

Value at stake for a typical Food & Beverage company (\$M, 2023F)¹



1. Based on a typical Food & Beverage company with \$10B revenue

Business Impact



Top-line growth



Cost reduction



Trax: Taking shelves from image to insight

In competitive markets with tight margins, every detail counts for bricks-and-mortar stores. Decisions that put the right products and promotions in the right place on shelves can mean the difference between survival and success. That's where timely data becomes invaluable. Retailers and consumer brands are turning to data analysis and AI to draw out as much insight as possible and gain an edge. They can look through inventories and sales receipts to see what items are coming in and how well they're selling, but it's much harder to find data on what happens in between.

That's where Trax comes in. Its computer vision platform is built on powerful AI technology to scan individual products and check shelf displays, product prices, and promotions. Clients can get timely insights into how their products are performing in their exact locations on shelves, so they can react accordingly. "Our mission is to digitize the store," says Change to Dror Feldheim, President at Trax. "We can collect data from multiple devices and turn that into a digital representation of shelves in the physical store."

When Trax launched in 2010, its first clients were consumer brands that wanted to know more about how their products were being displayed and promoted in retail stores. The company grew quickly, acquiring world-famous clients such as Coca-Cola. By 2017, Trax started to work with large retailers as well, which was a great opportunity that came with unique challenges. As well as technical challenges, retail stores had specific concerns about the security of their data and where it was being stored. Retail clients made it clear to Trax that they wanted its services to be free of any links to the retail market, in order to safeguard their data from competitors. Trax saw an opportunity to both reassure its new clients and build resilience in its platform with a multi-cloud infrastructure. The company embarked on a three-month trial of the leading cloud vendors, and decided on Google Cloud Platform for its cost-effectiveness and ease of use.



"Our engineers found they just clicked most easily with Google Cloud Platform," says Dror. "Their opinion carried a lot of weight in the final decision."

For its new multi-cloud infrastructure, Trax planned in advance what the architecture would look like and how the clouds would relate to each other. Specifically, it considered whether there would be a master-slave model, or whether the two clouds could operate independently of each other. Given the commercial needs of its clients, Trax opted for the latter, building an infrastructure that switches between clouds if needed, with no loss of service. As the mainstay of Trax's Google Cloud Platform implementation, Compute Engine instances allow the company to replicate existing tasks and services with ease. With the ability to spin up and shut down servers as needed, Trax can now respond instantly to market changes that reveal trending merchandising display techniques or even provide valuable upsell opportunities.

"Google Cloud is vital to achieving our strategic goals of reaching more retailers. We have a stable, robust infrastructure that meets the needs of our customers by providing the secure computing power to process tens of thousands of SKUs across an entire store, and produce timely insights with our image recognition engines that can rapidly address any out-of-stocks or other shelf-execution gaps. With this expansion of our partnership with Google Cloud, we can address the market even better than before."

Dror Feldheim
President, Trax

Source: [Trax: Digitizing retail stores with Google Cloud Platform to take shelves from image to insight / Trax](#)

Transforming go-to-market in an omnichannel ecosystem

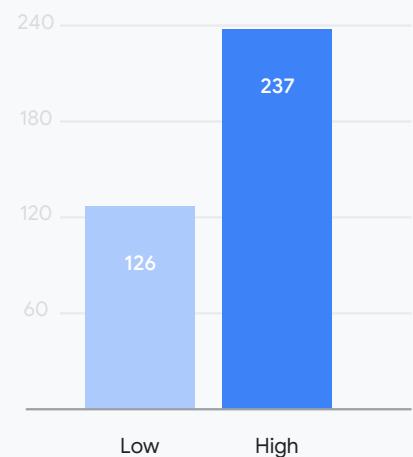
Trade promotion optimization

Trade promotion optimization (TPO, for short) encompasses the tracking and monitoring of trade spend (i.e. the amount that a CPG company would spend to promote a product in-store), and the optimization of trade spend allocation across the various retail outlets that CPGs are using. As such, it aims at answering one of the key questions that keep CPG executives up at night: How do you optimize trade promotion marketing efforts?

Our research shows that using advanced analytics and AI/ML-driven automation here is a major driver for top-line growth, as optimized trade spend (e.g. coupons, discounts) can boost revenue from retail trade; as well as for cost reduction, as marketing and sales efforts are optimized. In fact, the value at stake for a single sample Food & Beverage company ranges from \$126M to \$237M in combined revenue increase and cost reductions.

For instance, CPGs may use TPO solutions to optimize their trade spend allocation across retail outlets, beyond simply tracking and monitoring. Using rich, augmented data allows them to understand how performance differs and to develop rules and guidelines for promotions.

Value at stake for a typical Food & Beverage (\$M, 2023F)¹



1. Based on a typical Food & Beverage company with \$10B revenue

Business Impact



Top-line growth



Cost reduction

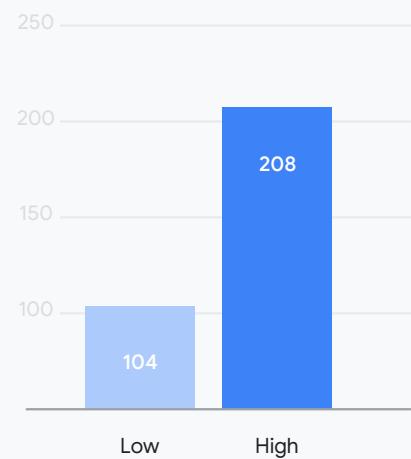
Transforming go-to-market in an omnichannel ecosystem

Ecommerce channel set-up and hosting

There's no ecommerce without an online presence. No chance at direct-to-consumer online sales, without proper hosting. Enabling a standard hosting infrastructure for the most widespread third party ecommerce solutions is key.

Think, hosting on Shopify or BigCommerce for a Personal Care & Home direct-to-consumer website. Or building it on your own using a cloud platform. Especially when easily integratable with leading solution providers, ecommerce channel set-up and hosting is a key enabler for online sales. It's why this use case—even for a standard Personal Care & Home company—boasts a whopping \$104B to \$208B in value at stake.

Value at stake for a typical Personal Care & Home (\$M, 2023F)¹



1. Based on a typical Personal Care & Home company with \$10B revenue

Business Impact



Top-line growth



Lush: global migration in 22 days

From a single shop in an English seaside town, Lush has transformed into a global ethical cosmetics brand with revenues of over £700 million in just two decades. Alongside over 930 stores in 49 countries, Lush sells its handmade, fresh products online through the company's website. Yet periods of peak demand can overwhelm retail websites when they're most needed.

For two years running, the Lush website crashed on Boxing Day while experiencing traffic of up to 12 transactions per second, three times the scaled-for capacity. Rather than risk another outage, Lush chose to migrate its entire global infrastructure, including ecommerce systems, mobile apps and retail systems onto another cloud provider. The migration would involve 17 websites across the world, transferring customer and product data. In addition, it had to take place over the course of 22 days in December, the retailer's busiest month.

Lush enlisted the help of their long-term Google partner Ancoris, together with the support of Claranet, both Google Cloud Premier Partners, to drive the project forward. Google Cloud Platform offered an intuitive interface for speedy deployment, rapid feedback and easy modification that proved core to meeting this tight timeframe. Thanks to a successful migration to Google Cloud Platform, the Lush website handled its first Boxing Day with no instability or outages, while in the longer term, Lush has cut hosting costs by 40% as a result of migrating to Google Cloud Platform.

"With its positive approach to open-source and its promise of 100% renewable energy for its data centers by the end of 2017, Google Cloud Platform really aligned with our company ethics."

Ryan Kerry
Global Head of Engineering
and Technology, Lush

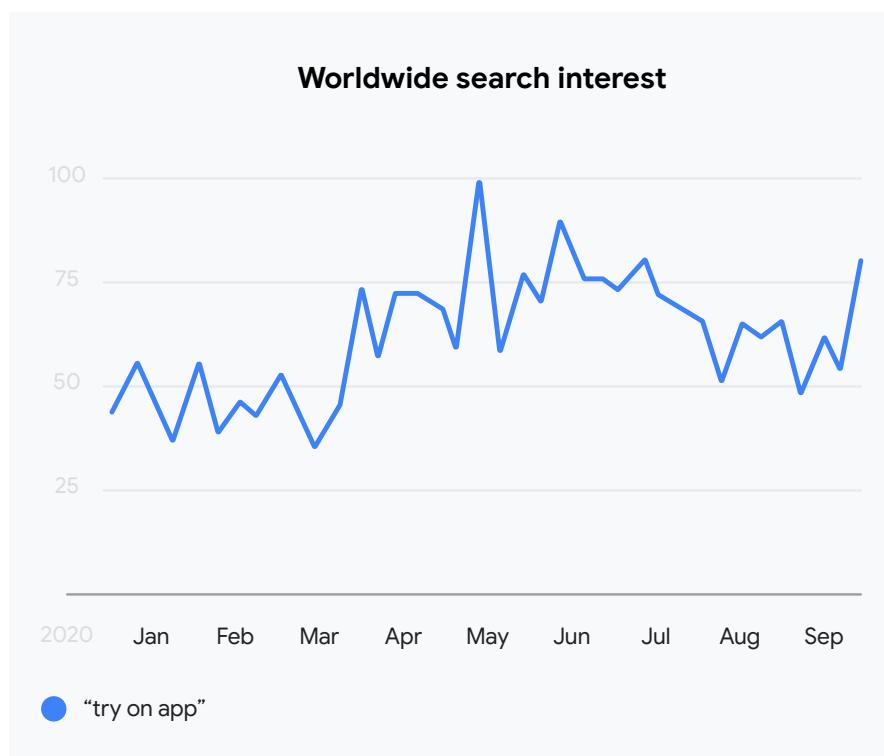
Source: Google [Lush: global migration in 22 days](#)

Transforming go-to-market in an omnichannel ecosystem

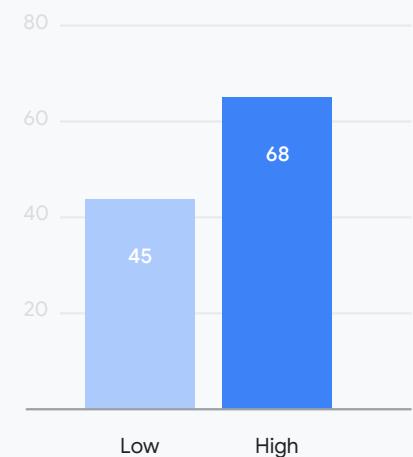
AI-powered beauty apps

Allowing consumers to try on beauty products directly in a beauty app is becoming increasingly sought after. Searches for try-on apps grew during the pandemic with consumers reluctant to step into stores. Imagine an Android app that allows a female shopper to try different shades of foundation to match her skin color, or to experiment with different shades of lipsticks at home—in readiness for when leaving her own four walls becomes normal again. Built-in image recognition and image processing capabilities are keys to enabling this.

Once deployed, beauty apps appeal to consumers with \$45M and \$68M in expected revenue uplift from in-app sales—quite the revenue boost for a typical Beauty company with \$3B in yearly turnover.



Value at stake for a typical Beauty company (\$M, 2023F)¹



1. Based on a typical Beauty company with \$3B revenue

Business Impact



Top-line growth



Shopping for a beauty product? Try it on with Google

If you're shopping for beauty products, it's difficult to make a decision on such personal items without trying them on. You may want to know how sheer a lip gloss is, how much pigment eyeshadow contains, or what foundation looks like on your skin tone. Without seeing the products up close, this can be hard.

To make it easier for you to answer these questions from home, we're working with data partners ModiFace and Perfect Corp to help you better visualize thousands of lipstick and eyeshadow shades from your favorite brands like L'Oréal, MAC Cosmetics, Black Opal, and Charlotte Tilbury. Now, when you search for a lipstick or eyeshadow product, like L'Oréal's Infallible Paints Metallic Eyeshadow, you can see what it looks like on a range of skin tones and compare shades and textures to help you find the perfect match.

You can also virtually try makeup products right from the Google app. Find the perfect nude lip by searching for MAC Powder Kiss Lipstick and trying each shade in the collection. If you're looking for a velvety matte lipstick for your holiday video calls with family and friends, search for NARS Powermatte Lip Pigment and find the color that matches your style.

Sometimes it's helpful to get recommendations and see how products work for other people. Now as you browse [Google Shopping](#) on your phone or scroll through the Discover feed in the Google app, we'll show recommendations from beauty, apparel, and home and garden enthusiasts and experts. If a product catches your eye, you can hear directly from experts on why they love it and how they use it.

Source: Google [Shopping for a beauty product? Try it on with Google.](#)

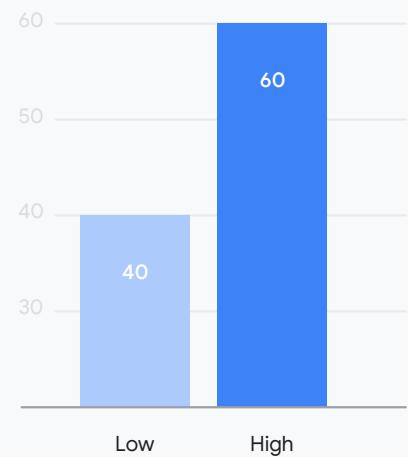
Transforming go-to-market in an omnichannel ecosystem

Personalized product recommendations

Let's imagine we are still in a Beauty app. Delivering consumer-specific recommendations and search results for products can be an additional lever for incremental sales, though to a slightly lesser extent—we expect between \$3M and \$4M worth of additional sales are realizable for a standard typical Beauty company.

An in-app feature suggesting "You may also be interested in" products to consumers can be a powerful lever. This presupposes the ability to track consumers through back-end capabilities, while also providing a delightful front-end experience. If these things are in place, an enjoyable shopping journey for users is sure to be the result.

Value at stake for a typical Beauty company (\$M, 2023F)¹



1. Based on a typical Beauty company with \$3B revenue

Business Impact



Top-line growth



Online shopping gets more personal with Recommendations AI

Google has spent years delivering high-quality recommendations across our flagship products like YouTube and Google Search. Recommendations AI draws on that rich experience to give organizations a way to deliver highly personalized product recommendations.

Recommendations AI pieces together the history of a consumer's shopping journey and serves them with personalized product recommendations. It also excels at handling recommendations in scenarios with long-tail products and cold-start users and items. Its 'context hungry' deep learning models use item and user metadata to draw insights across millions of items at scale, and constantly iterate on those insights in real-time in a way that is impossible for manually-curated rules to achieve.

Hanes Australasia—home to many iconic Australian apparel and lifestyle brands—is one customer that's powering personalization with Recommendations AI.

"Recommendations AI delivers extremely good data execution and shows how Google Cloud can turn data into real commercial value," says Peter Luu, Online Analytics Manager at Hanes Australasia. "When we A/B tested the recommendations from Recommendations AI against our previous manual system, we identified a double-digit uplift in revenue per session."

Luu also added, "the product is extremely easy to use—Google Cloud has provided the expertise, functionality, and performance, so we do not need to be machine learning experts to make the most of it."

Source: Google [Online shopping gets more personal with Recommendations AI](#)

Driving connected, efficient, and sustainable operations

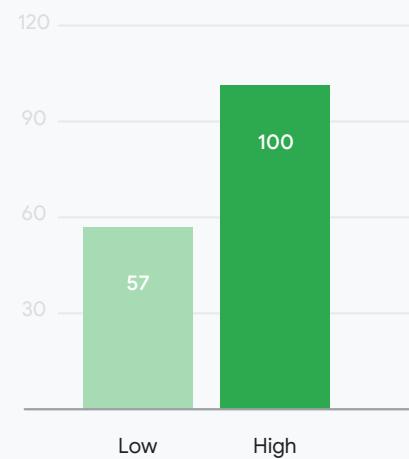
Waste-reducing and energy efficiency-optimizing production process adjustments

While this use case may be a mouthful, it is also a pocket full of value potential with \$57M to \$100M at stake for a single Food & Beverage player. While it has enormously positive environmental benefits, it is also highly attractive from a P&L perspective, because it allows CPGs substantial savings on input and production costs.

This use case entails assessing waste production and energy consumption across all manufacturing steps (e.g. on the line, in operations) and building an optimization model that minimizes waste and energy usage, while maximizing productivity. Integrated data sources across the production chain would allow both this analysis and a system to flag unexpected increases in waste and energy consumption. It may also automatically adjust levers to minimize such factors and resulting negative side effects.

Here's an example where this could be applied—a dairy product, kept at the right temperature within precise tolerances throughout the production and distribution processes, saving 20% of its energy costs by reducing excessive chilling. This is highly relevant for many CPG players, and especially those needing to maintain a cold chain.

Value at stake for a typical Food & Beverage company (\$M, 2023F)¹



1. Based on a typical Food & Beverage company with \$10B revenue

Business Impact



Cost reduction



ESG



Announcing round-the-clock clean energy for cloud

Google has a long track record on clean energy. In 2007, we were the first major company to become carbon neutral. And in 2017, we became the first company of our size to match 100% of electricity consumption with renewable energy.

In September 2020, we set our **most ambitious energy goal yet**: to run our business on carbon-free energy everywhere, at all times, by 2030. This means we're aiming to always have our data centers supplied with carbon-free energy. We are the first cloud provider to make this commitment, and we intend to be the first to achieve it, too.

With the goal to reach 24/7 carbon-free energy by 2030, we can demonstrate that a carbon-free economy is possible.

We're developing tools to help our customers measure the impact of migrating to Google Cloud, report on their emissions, and reduce them. We're also building the Industrial Adaptive Controls platform in collaboration with DeepMind, which provides AI control of cooling systems in commercial and industrial facilities. In the U.S. alone, 12% of all electricity is used for heating and cooling of commercial buildings.¹⁴ Now, the same AI technology that helps reduce the energy we use to cool our data centers by 30% will be available to the world's largest industrial enterprises, building management software providers, and data center operators.

If you're interested in running your company on the only cloud provider that has achieved 100% renewable energy, we're here to help you along the way. Learn more about our plans to move to 24/7 carbon-free energy in [this whitepaper](#). And be sure to read Google's broader [sustainability announcement](#), which includes our commitment to 24/7 carbon-free energy by 2030, a EUR 10 million Google Impact Challenge focused on mitigating climate change, and several other actions to help Google users make smarter decisions for the planet every day.

14. Alliance to Save Energy & U.S. Energy Information Administration

Source: [Google Announcing 'round-the-clock clean energy for cloud'](#)

Driving connected, efficient, and sustainable operations

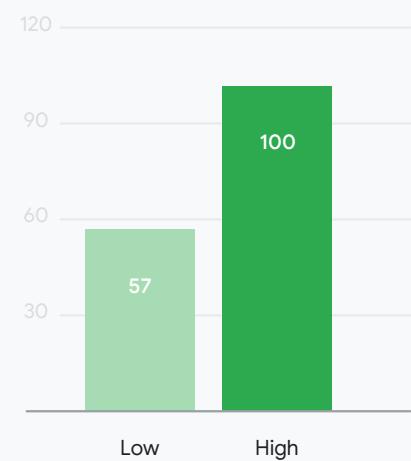
Real-time performance and OEE management

Overall equipment effectiveness (OEE) is a measure for identifying the amount of planned production time that is used productively. It's a gold standard for improving manufacturing productivity. Digital and analytics can help here, too, by allowing the constant tracking of productivity and performance of all equipment and assets during production.

Imagine real-time equipment performance monitoring that is hooked up to all plant machines. Real-time capturing of data, instant insights generation, and automated adjustments help maximize the availability, quality, and performance of equipment. Insights could be made available via an Android app to all production managers on shift. Similarly, leadership teams can look into a cross-plant view for the totality of operations.

The upside from implementing this use case at scale is enormous: we estimate a potential of between \$57M and \$100M for a single Food & Beverage company, largely through decreased production costs.

Value at stake for a typical Food & Beverage company (\$M, 2023F)¹



1. Based on a typical Food & Beverage company with \$10B revenue

Business Impact



Cost reduction

How AI can help make safer baby food (and other products)

Quality control is a challenge for most industries, but in the world of food production, it's one of the biggest. With food, products are as good as the ingredients that go into them. Raw materials can vary dramatically, from produce box to produce box, or even from apple to apple. This means inspecting and sorting the good ingredients from the bad is one of the most important tasks any food company does. But all that work inspecting by hand can be time-consuming and arduous both in terms of overhead and manpower. Kewpie Corporation turned to a surprising place to explore better ways to ensure food quality: artificial intelligence built on TensorFlow.

Although Kewpie Corporation is most famous for their namesake mayonnaise, the company has been around for 100 years with dozens of products, from dressings to condiments to baby foods. Kewpie has always believed that good products begin with good ingredients.

In a quest to mechanize the visual detection & quality inspection of ingredients Kewpie turned to machine learning. To kick off the project, the company started with one of the most difficult inspection targets: diced potatoes. Because they're an ingredient in baby food, diced potatoes are subject to the strictest scrutiny both in terms of safety and peace of mind.

The company designed a TensorFlow based system that was able to learn how to identify acceptable ingredients on a conveyor belt, and reject as defective any ingredients that failed to match. The AI picked out defective ingredients with near-perfect accuracy, which was hugely exciting to our staff. The AI-enabled inspection system performs a rough removal of defective ingredients, then trained staff inspects that work to ensure nothing slips through. That way Kewpie gets "good" ingredients faster than ever and is able to process more food and boost production.



"Existing inspection systems such as machine vision have not been universally adopted in our industry because they're expensive and require considerable space. So there's no question that the need for AI-enabled inspection systems is critical. We hope, through machine learning, we're bringing even more safe and reassuring products to more people around the world."

Takeshi Ogino
Production Division, Kewpie Corporation

Source: Google [How AI can help make safer baby food \(and other products\)](#)

Driving connected, efficient, and sustainable operations

Demand forecasting-driven supply planning

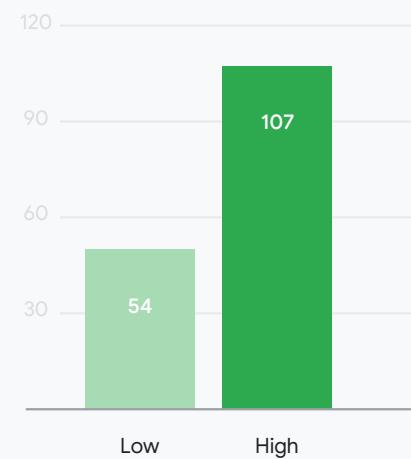
How can you best predict demand, avoiding stock-outs and excess inventory?

In other words, how can you ensure your demand predictions best inform your supply planning and thus optimize inventory levels?

To date, demand forecasting is done periodically. In an ideal world, real-time data would be fed into a model and automatic back-end order management processes would be initiated based on the model output. Imagine an ML model that uses past demand, sales, and inventory, as well as planned promo events, expected economic and weather conditions, and so on to build a view of category and unit-level demand by geography, and then recommend target stock levels needed to meet it.

Effects would be enormous. A single Personal Care & Home player is looking at a value at stake in the range of \$54M to \$104M. Building a demand forecasting and inventory projection model, taking into account past performance and feeding in the latest consumer, channel, supplier, and ingredient partner data would not only reduce COGS but also boost sales, given optimized supply planning.

Value at stake for a typical Personal Care & Home company (\$M, 2023F)¹



1. Based on a typical Personal Care & Home company with \$10B revenue

Business Impact



Top-line growth



Cost reduction

Chapter 3

Accelerating delivery of digital transformation



Barriers and benefits of cloud

Despite the significant value of the aforementioned use cases to CPGs, a wide range of barriers to adopting digital and analytics use cases remain. Some of these barriers are falling as technology progresses, as companies learn to break differences down organizationally and across processes, and as management teams see the value and what is possible with the cloud.

However, there are still many barriers to capturing value. Siloed technology systems that inadvertently create 'islands of information', as well as disparate systems that cannot freely and easily communicate, make it difficult for companies to upgrade technologies or link the new with the old.

Data limitations, mostly stemming from the various formats and schemas in which the data is stored—as opposed to the accessibility of the data—drive high extract-transform-load (ETL) costs, not to mention limited real-time access. In addition, there are often organizational barriers that limit cross-functional innovation given politics or power plays—the cultural hurdles that take mindset shifts and strong leadership to surmount. Finally, some barriers are not real, but instead perceived or perpetuated. Myths abound, such as the idea that cloud's main value is in IT cost-cutting, or that cloud computing costs more than in-house computing. Or that latency is greater on the cloud than on-prem, or the cloud is only useful for hosting single applications or entire data centers. These myths are all based on adoptions gone wrong or fears of significant change¹⁵

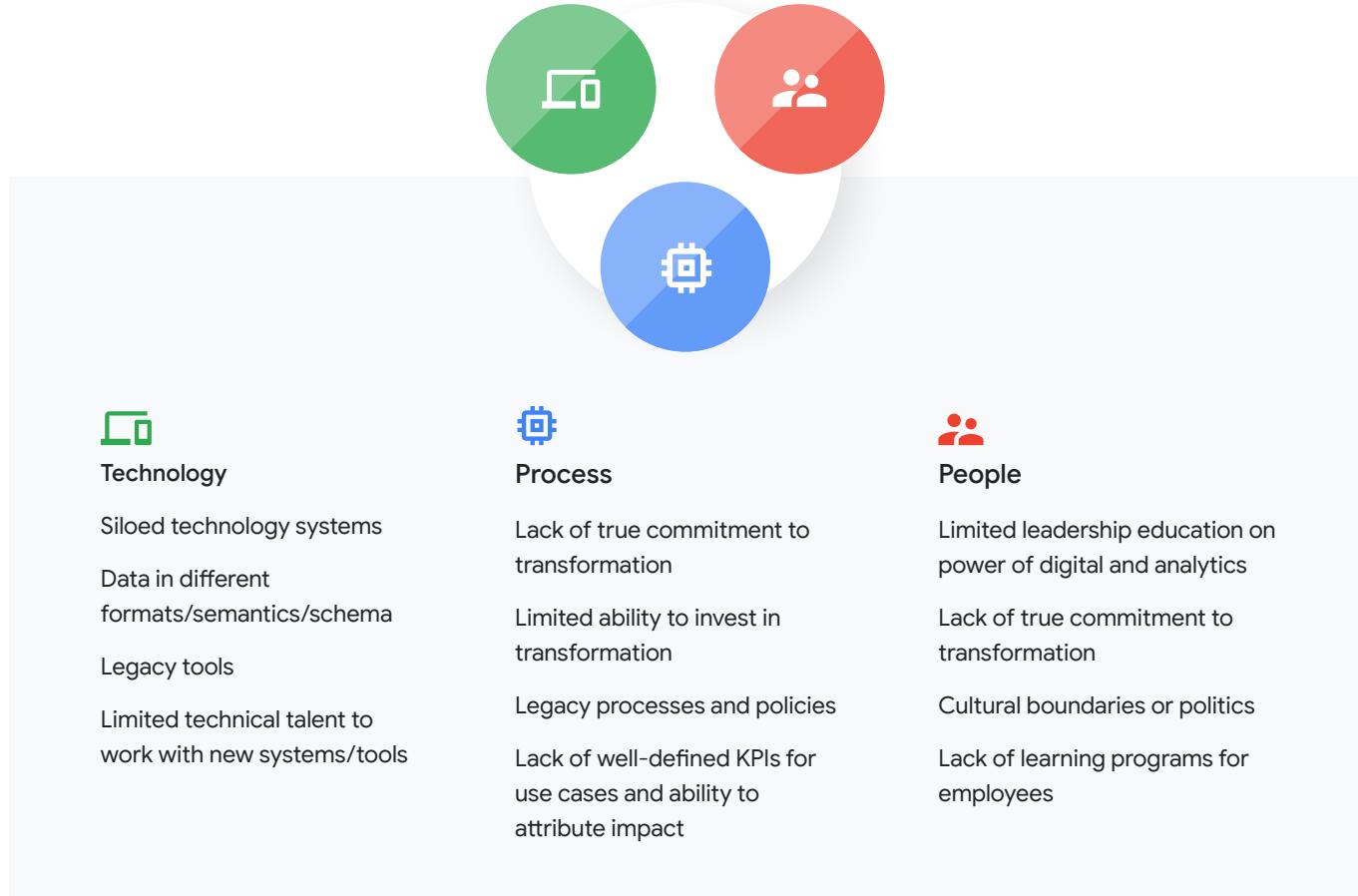
While a cloud partner cannot solve all the barriers that companies face in their journeys to digitally and analytically transform, they can help turn some barriers into opportunities. Cloud partners like Google make it possible to get a head start with talent, even if an organization is missing technical expertise or the bandwidth to commit to a new project with their current teams.



15. "Debunking seven common myths about cloud," McKinsey & Company, October 5, 2020

A cloud partner can provide a shortcut to new feature development by enabling technology teams to build on already-built infrastructure and platforms, so they can focus on testing and learning quickly and cheaply, as opposed to building a house from the ground up. Partners can also provide scalable security—an often misunderstood or neglected aspect critical to digital transformations. They offer the rare opportunity to eliminate vast operational overhead and instead leverage multibillion-dollar security investments by cloud service providers so that organizations can consume the cloud securely and immediately.¹⁶

Key pain points and barriers to CPG digital transformation



16. [How CIOs and CTOs can accelerate digital transformations through cloud platforms](#), McKinsey & Company, September 15, 2020

This immediate consumption has several cascading benefits. First, it empowers organizations to release code hundreds or even thousands of times per day in an automated way to respond more quickly to market demands—20% to 40% faster, in fact—all the while testing and learning.¹⁷ Second, it opens the door to create innovative business offerings, given the breadth of third-party applications that can be leveraged as features (e.g. natural language processing, data aggregation, facial recognition, etc.), capabilities that alone would take swarms of engineers to build. Finally, cloud enables companies to scale efficiently, so that spikes in demand (like what happened during the onset of the pandemic in March 2020 and periodically since then) can be met without the need to build for a surge.

A cloud partner can help organizations respond 20 to 40% faster to market demands - all the while testing and learning¹⁷



¹⁷. Cameron Coles, "11 advantages of cloud computing and how your business can benefit from them," McAfee, June 9, 2015



How Google can help

The new normal for the CPG industry will be digital, and it will be a quick path upward for those who are willing to boldly implement digital and analytics for growth. But the cloud is not just about technology. It is a fundamentally new paradigm that places human creativity and ingenuity at the heart of the modern enterprise. To thrive in this new paradigm, your journey to the cloud is about both the technology itself and the people and processes that form the fabric of your organization.

At Google Cloud, we are investing in industry expertise and solutions designed for CPG so we can meet you wherever you are in your transformation and work hand-in-hand with you to solve your most complex challenges. Driving consumer closeness through insights efficiently, dynamically, and at scale is the foundation of our business. Google Cloud uniquely has the data analytics expertise, a deep understanding of consumers, and a rich history of partnering with brands for joint success. We can help CPG companies unlock consumer growth, capture new routes to market, and drive connected operations with industry-leading infrastructure, data analytics, and AI/ML-powered solutions. We do all of this while operating the [cleanest cloud](#) in the industry, matching 100% of the electricity we use with renewable energy. This commitment to sustainability enables our customers to meet their own cloud computing needs with zero net carbon emissions.

Google Cloud

[Security](#) and data protection are fundamental to how we design and build our products. The data a customer stores and manages on Google Cloud is only used to provide that customer with Google Cloud services and to make Google Cloud services work better for them, and for no other purpose. Not advertising, not for anything else. We have robust internal controls and auditing to protect against insider access to customer data. This includes providing our customers with near real-time logs of Google administrator access on Google Cloud—we are the only major cloud to provide this level of access transparency. In addition to continuous security monitoring, all customer data stored in Google Cloud is encrypted at rest and in transit by default. We also enable our customers to monitor their own account activity and provide reports and logs that make it easy for a customer's administrator to examine potential security risks, track access, analyze administrator activity, and much more.

With an [open cloud](#) approach, we make it easy for you to bring your data not just from [Google Marketing Platform](#) but hundreds of other sources together. This breaks the silos that keep you from creating a single view of the consumer across all interactions with your brands—so you can drive personalized, predictive marketing in real time. You can create a customer data platform, drive higher marketing ROI, and design to value by using BigQuery to run data analytics at petabyte scale. Combining your consumer (customer data platform), marketing, operations, and supply chain data is easy with our [smart analytics](#) solutions.

By breaking data silos and modernizing your critical business applications to operate at cloud speed, no part of your organization is left behind. As an example (for customers who run their business on SAP), our [SAP on Google Cloud](#) offerings help you extend digital agility across your operations from planning to inventory and manufacturing to supply chain.

With your data in Google Cloud, our industry leading [Cloud AI offerings](#) help you easily build your own, use our AI building blocks or deploy state-of-the-art, pre-trained AI solutions like Recommendations AI and Vision API Product Search. Democratize access to data and actionable insights in real time [across your organization](#) with self-service visualizations using [Looker](#) and set your teams to innovate collaboratively in real time with [Google Workspace](#), which embodies our vision for a future where work is more flexible, time is more precious, and enabling stronger human connections becomes even more important.



Google Cloud

With solution offerings and use cases across the CPG [value chain](#), Google Cloud and our ecosystem of technology and services partners are helping CPG companies lead in the digital world.

Seven out of the top 10 CPG and retail companies trust Google Cloud for their digital and analytics transformation. Businesses like [Procter & Gamble](#), [Unilever](#) and [Rémy Cointreau](#) are working with Google Cloud because of our industry-first [solutions](#) and expertise, as well as our robust ecosystem of technology and services partners that make it easy to solve for your unique business and technology landscape.

With the transformation cloud, we're solving the most complex challenges for CPG customers around the world. Contact your Google Cloud sales representative or reach out to us online for a complimentary consultation on how we can help drive value for your business.



Visit us online at
g.co/cloud/cpg

Google Cloud